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Bob Cooper's

FEBRUARY 15 1999

SatFACTS

MONTHLY



Reporting on "The World" of satellite television in the Pacific and Asia

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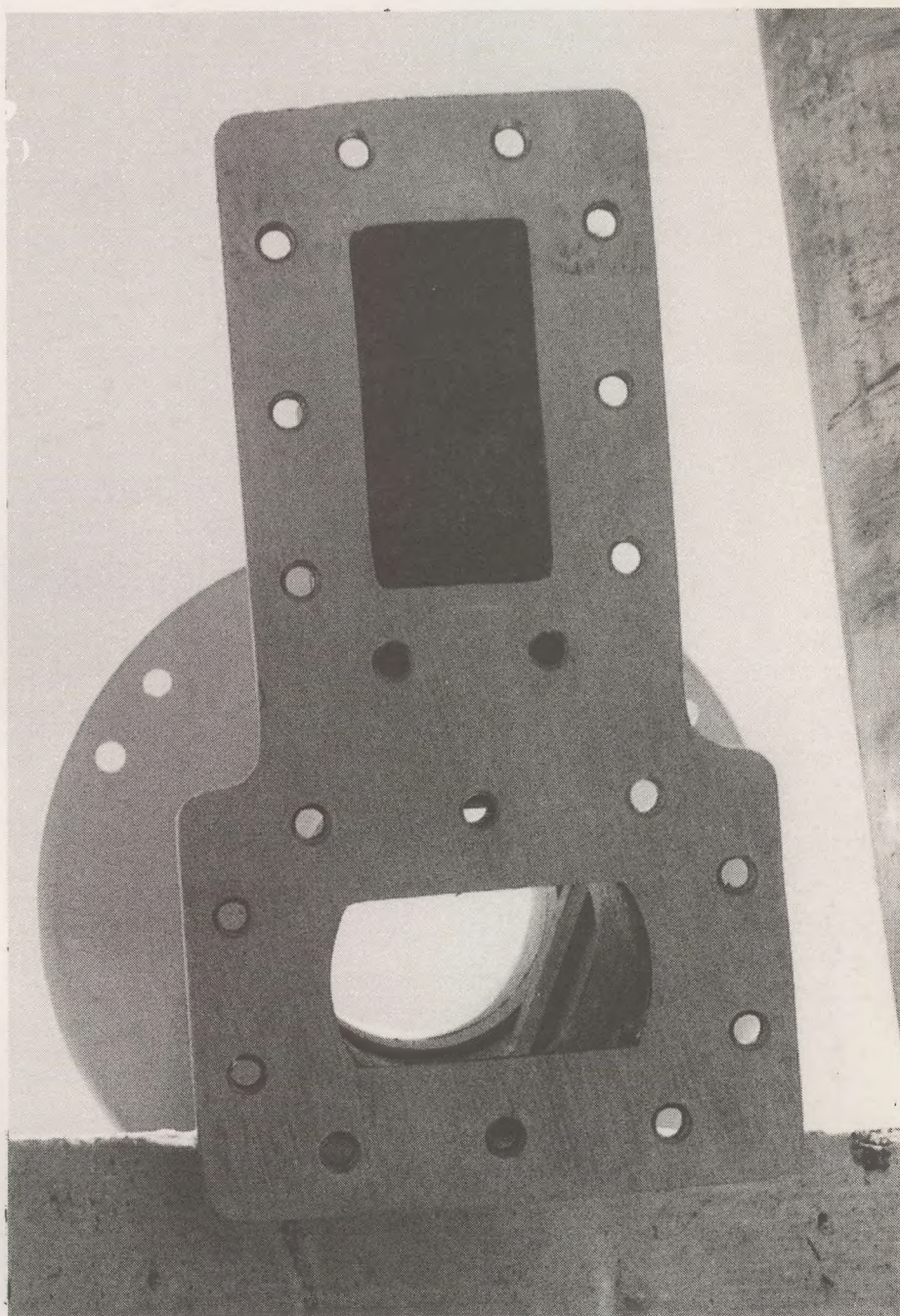
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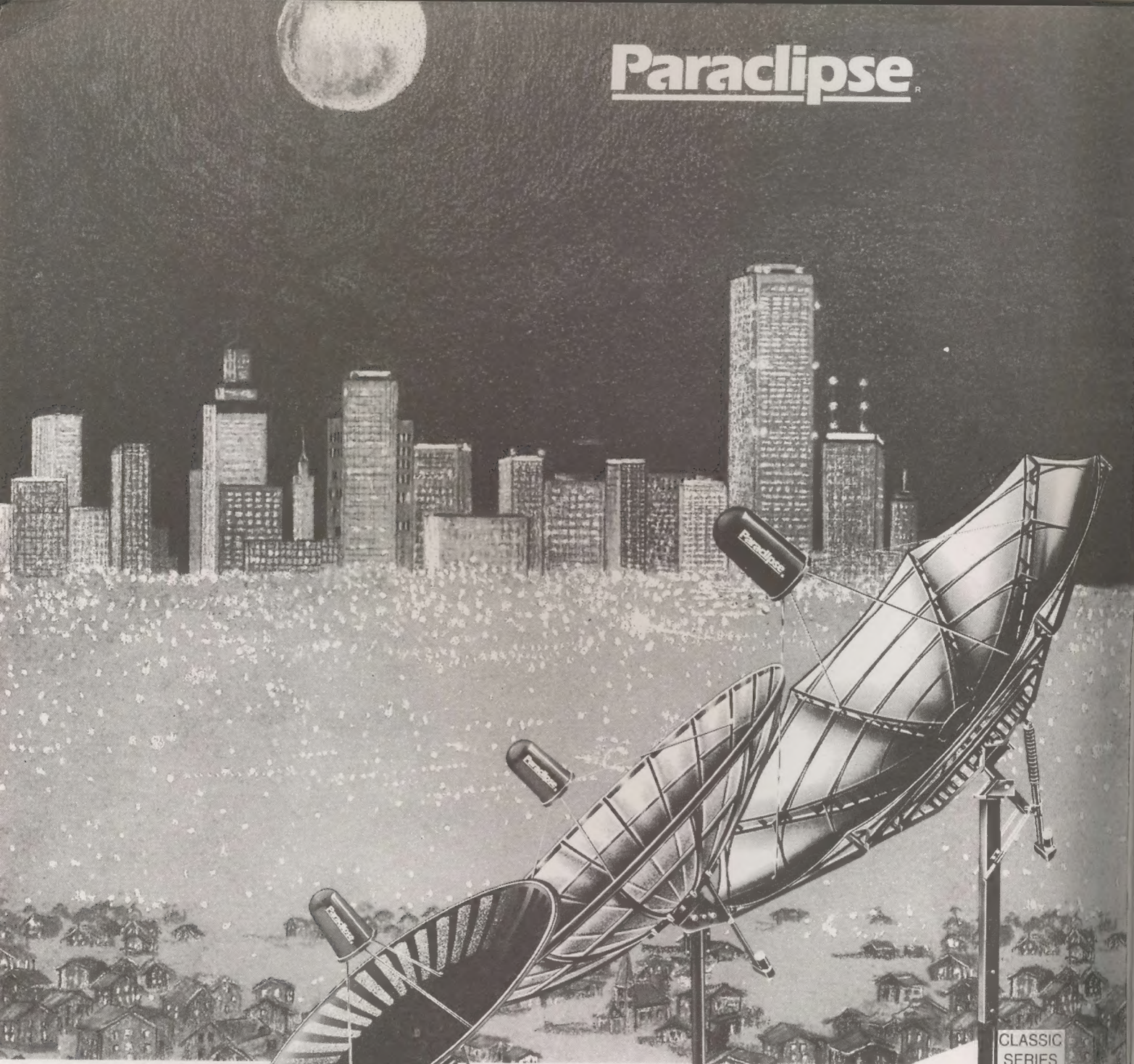
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or Folly?**

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This publication is dedicated to the premise that as we enter the 21st century, ancient 20th century notions concerning borders and boundaries no longer define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education.

These messages are available to anyone willing to install the appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

Editor/Publisher

Robert B. Cooper (ZL4AAA)
Office Manager
Gay V. Cooper (ZL1GG)

Reaching SatFACTS

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COOP'S COMMENT

Although unofficial records tell us 18,000 Plessey and Scientific Atlanta B-MAC decoders were sold into Australia from 1985 onwards, the reality is that something closer to 12,000 have actually reappeared for the analogue to digital RTIF conversion process. Perhaps a 33% "lost from view" record is not surprising and perhaps the "missing" 6,000 are all in use at institutions and other non-RABS locations.

12,000 rural locations represents around 45,000 people and that in turn amounts to .00268% of the total Australian population base.

There are more people than that living in Greenland (55,000) or Tonga (95,000). As noble as reaching these untouchable Australians may be, does it justify soaking up two (now - three soon) full 54 MHz transponders on Optus B3? I think not.

Which makes the December 22 decision by the Australian Broadcasting Authority especially important. Under petition by Alice Springs based Imparja TV and Townsville based Telecasters Australia Ltd (TAL) on behalf of its QQQ service, the ABA has approved an "aggregation of service areas." That means that anyone living in the as-previously defined Imparja regions (includes NT, segments of Queensland, NSW and Victoria) or QQQ regions (Queensland, segments of NT, NSW) can now install a home satellite dish and receive programming from both telecasters. Imparja now broadcasts programmes from national networks 9 and 10, QQQ has switched to 7 network and between the two stations, viewers will (for the first time) gain access to all three national networks.

The ABA, prodded by Imparja and TAL, then went a half step further. Anyone - living *anyplace* in Australia except Western Australia - who can "prove" they do not have terrestrial TV reception from existing transmitters can (through their satellite dealer) become a viewer of the Imparja + QQQ bouquet (which, by the way, will also include from sometime in March ABC, SBS, TVSN, Horizon and possibly others plus some radio services). This should be incredibly good news to Australians living in NSW, Victoria, Tasmania - anyplace but WA - if their existing TV reception is scratchy or non-existent. In a mountainous country with pockets of people scattered across 7,682,300 square kilometres, there may be tens of thousands who will for the first time gain proper access to the national commercial networks (plus ABC and SBS which they could previously receive using B-MAC analogue equipment).

Imparja and QQQ deserve a great deal of credit for making this happen. The ABA, not widely respected for making common sense decisions, got this one right. Viewers from Tasmania to NT, South Australia to Queensland - including Lord Howe and Norfolk - will all become better Australians as a result of this decision. Nothing unifies a nation as effectively as the sharing of a common national television experience.

There will be "launch" problems, of course. To qualify for "aggregated reception," a home must be obviously located where terrestrial reception does not exist (name of the property and postal code for rural areas) or if inside of a terrestrial TV coverage zone, supply a letter from the terrestrial broadcasters which approve satellite service because of poor or no terrestrial service. A property on the Cape York Peninsula would be "automatic" while a home in downtown Sydney buried behind hills and tall buildings, unable to receive adequate terrestrial TV, would require a letter. As satellite dealers, you will have to create the system that works for you in each case. SatFACTS will provide a forum for this procedure as it matures.

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-ON THE COVER-

A carefully crafted chunk of aluminium becomes a circular polarised feed
(ADL CP OR-100) p. 8.



February 15, 1999



Asian Readers

"I borrowed SatFACTS from a friend (who stood over my shoulder to make sure it went back to him!) and need to know how I can subscribe."

Maggie Chen, Microelectronics Technology Inc.
Hsinchu Science-Based Park, Hsinchu, Taiwan

By tracking magazines returned because of post office problems, we have discovered Korea is the most difficult country in Asia to ship magazines to. We don't know why - but around half of our Korean subscribers have their magazines returned to us every month because the post office cannot figure out the address. Which, after double checking, has always been spot on correct - and we resend it a second time. Even Myanmar, Afghanistan and Cambodia do not have this problem. And Taiwan mail always seems to go through OK - so welcome to our subscription roster!

Rugby for Pago Pago

"Help! Can anyone tell me who has either Rugby feeds or Rugby rights for distribution in American Samoa? I would like to acquire closed circuit and/or retransmission rights but need some help contacting those who own them."

Bill Hyman, Island Business Center, PO Box 340,
Pago Pago, American Samoa (billh@samoatelco.com)

Setting the Record Straight

"I'd take issue with the suggestion that the BSKyB Digiboxes are hard to install. I've done a couple myself and watched the professionals - it really is a case of following onscreen instructions and takes about two minutes (not including the wait for Sky to authorise the card over the air which can take two minutes up to a couple of hours!). Sorry if this sounds like a whinge direct from BSKyB - we are the last to blindly accept all they tell us, but credit where credit is due."

Geoff Bains, Editor, What Satellite TV
London, UK

We reported in CTD (December 04) British installers were more unhappy than pleased with BSKyB install procedures. Now that the newness has worn off, it appears their displeasure was largely related to the often long wait (as Geoff notes) to "get through" to the authorisation centre and have a particular IRD "hit" (turned on). New Zealand installers have a similar complaint - especially in the 9-10AM period when every installer starts a new day and tries to get his first IRD of the day hit. FoxSat installers will probably find the same queue applies when they begin serious new installs in March.

Sat TV on Fiji

"The company I work for has property on Fiji and wishes to have TV reception there. What is available, whom do we contact?"

Danny Burks, Andalex Resources, Louisville, Kentucky
Note - we supplied contacts at SPACE member firms in Fiji - our standard practice for queries such as this.

PROGRAMMER
PROGRAMMING
PROMOTION

UPDATE

FEBRUARY 15, 1999

Aurora software hiccups. When you try to merge 35 TV and 42 radio services into a single bit stream, there are problems. A major challenge is assigning a bandwidth to each service based upon the video (or audio or data) content at that instant. The concept is attractive - a test card with no movement requires no frame to frame updates so can be "refreshed" with virtually no new memory and a very small bandwidth requirement. A fast paced event such as SBS carrying the American Super Bowl the evening of February 1st required very large frame to frame updates and therefore much more bandwidth. Aurora was testing SBS on TV channel 8 the evening of February 1 and those who were tuned in to other services (such as TVSN) found heavy amounts of horizontal shaking (pixilated), black and white blobs laced with random bits of unsynched colour. Abruptly at half-time, the TVSN images cleared up and simultaneously the SBS test signal lost most of its resolution (degrading from broadcast quality to a low grade of VHS). The challenges continue.

Optus midnight strike? Although virtually all evidence points to a shutting down of plans to offer Optus Vision DTH *in competition* to Foxtel/Foxsat, there is another theory. It says - Optus will offer a much scaled down 9-14 channel pay-TV service to Aurora subscribers for a modest monthly fee around A\$30 a month. Included would be three movie, 2 sport channels riding on the back of Aurora dishes installed for disadvantaged viewers throughout Australia. In this way, Optus would not be directly competing with Foxtel/Foxsat and would benefit by being the only service capable of delivering via one satellite connection terrestrial services from 7, 9, 10, ABC, SBS (none of these are available on Austar, nor Foxtel/Foxsat) along with a lower cost pay-TV package ("leaked" [Optus] memos suggest 11 pay-TV channels including Movie 1, Movie Extra, Movie Greats, TNT + Cartoons, Horizon, Odyssey, MTV, Sky News, ESPN, Seven Sports and Sky Racing - which at night becomes an optional adult channel, and, 2 + ethnic services - such as Greek Antenne TV, RAI International). This could prove to be the *smartest* pay-TV package yet offered!

GWN. Still on PAS-2 Ku in reasonably high quality PowerVu. And still on Aurora in degraded VHS-view (channel 22). GWN could fix this by asking for appropriate bandwidth plus proper feed to Aurora bouquet. With Western Australia competitor WIN TV expected up on Aurora (programme channel 20) in March or April, GWN will be odd man out left all by its lonesome over on PAS-2. Save your crying towel - pity the poor guys who bought PowerVu receivers for this service who could be stuck with A\$1,600 investments and two channels of so-so service (ABC and GWN) while neighbours delight in as many as 20 Aurora channels for half the equipment cost!

Ethnic service on PAS-8 Ku? "Street" word is, "*it is coming - as early as March 1st.*" Plan is for digital bouquet offering two Italian, 1 Greek, 1 Lebanese, 1 Chinese, 1 Arabic and possibly others. Subscribers will purchase own dish systems, pay fee per month for service of their choice. Uplinking through ex-Galaxy centre, Sydney - master install contract through Comet (Kingsley Munday, [+61] 2-9647-3101).

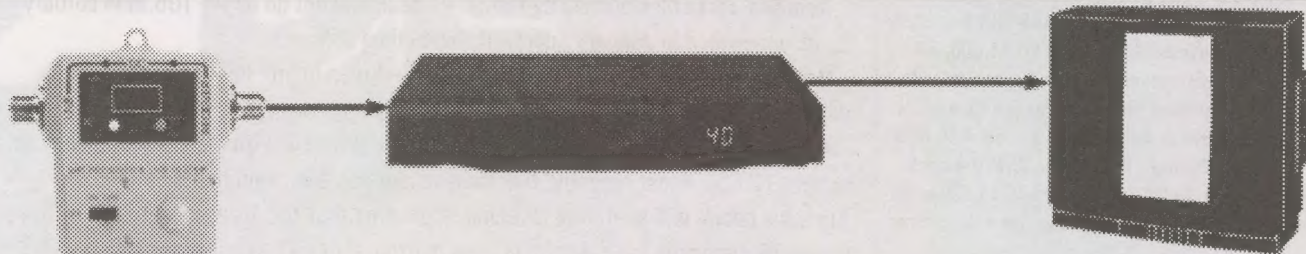
Dirty pictures? Latest *announced* adult programmer is called Skyt'L Digital, *claims* Orion 3 C-band service in digital bouquet with mixture of 4 FTA and 2 Irdeto CA. Current "plan" is CA Fantastica adults channel and Festival (French films) plus FTA Ring TV ("adult" chat line TV), Parlons Francais (educational service), Shalom TV & TJF (ethnic), and MarkeTV (shopping channel). Target date - "end of May"; CA subscription rate US\$420 per year, subscribers purchase own IRDs and dish dealers will be on ground sales reps receiving 10% commission for sales. Contact Hubert JP Fandoux, Email Galaxiegift@mis.nc, tel + +687-27-60-20, fax + +687-28-33-77.

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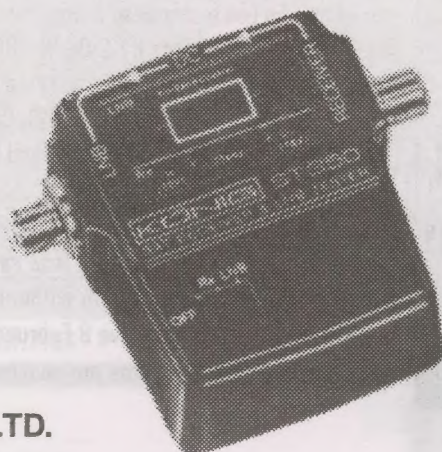
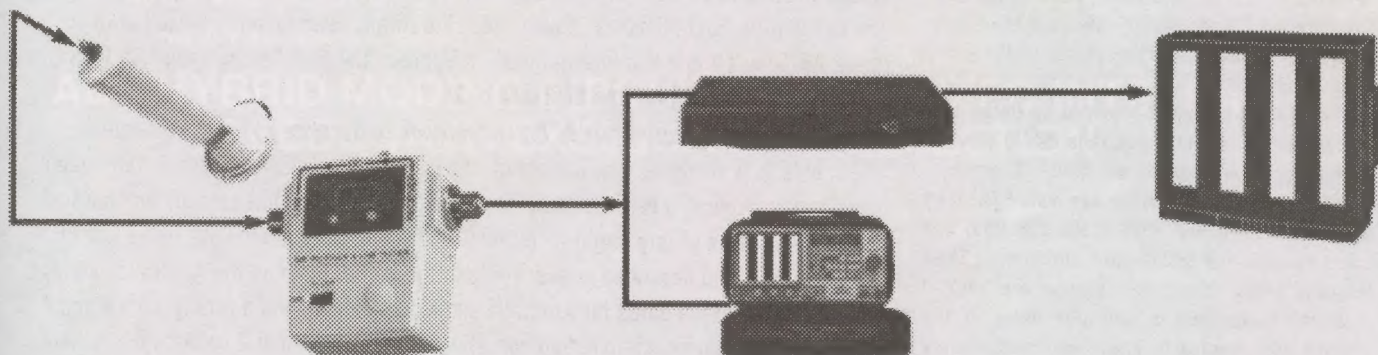
SATELLITE RECEIVER TEST

To test the operation of a satellite TV receiver, you only have to connect it to the **ST-350**, to select "Rx" mode and tune to 1385 MHz. By using a standard TV set you can verify that the test signal, consisting of two black bars and white bar in the centre, appears on the screen. Simultaneously, the **ST-350** generates a sound carrier at 7.02MHz that enables to check the audio function. It is usual that receivers are provided with switching signals for the LNB. Two LEDs on the **ST-350** indicate whether the supply voltage is 18 V or 13 V. The presence of a 22 kHz switching signal makes the LEDs to blink.

LNB VERIFICATION

One of the outstanding features of the **ST-350** is that it can evaluate most LNB circuits within a LNB. Through a plastic protector located on the front of the instrument, the **ST-350** radiates signals in the satellite downlink microwave frequency. By positioning the LNB in the radiating zone, three black bars and four white bars will appear on the TV screen. With this aim, the receiver has to be tuned at the frequency showed in the rear of the **ST-350**, which depends on the LNB being used.

It is usual to find LNBs in which one polarization fails. With the **ST-350** both polarizations can be checked immediately.



Web Site www.skandia.com.au
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Filipino Reception in Pacific

"Are we able to pickup Filipino TV or radio in NZ? What size dish, what type of LNB and receiver? What frequencies, what satellite and what angles?"

Vincent Matthys, Green Bay, Auckland, NZ
KIBC on As2 (3940 Hz, 26.655, 3/4) is a made for Filipino ex-pats FTA service living throughout Asia and the Pacific. This is an information and entertainment service more akin to a news and public service channel than a pure entertainment service. ABS-CBN is a totally commercial service (PAS-2, 3743 Vt, 21.800, 3/4) available by subscription. KIBC can be received with any recent vintage IRD as long as you have an unobstructed view of AsiaSat 2 at 100.5E. ABS-CBN ("The Filipino Channel") runs around US\$50 a month, requires a PowerVu IRD (approaching NZ\$3,000 each) and on their present transponder, a 3.7m dish anyplace in NZ.

RFO Up and Down

"Reference SF January, I live in NSW just south of Newcastle and can confirm the observation RFO has declined in signal level here. Between Christmas and New Year's day, the signal decreased marginally. On a 3m dish and Nokia 9500S, it is now in and out. Previously, I had Emailed RFO (in French) and their response was they had not changed anything and 'doubted Intelsat would change anything without consulting them'. Now I note Fashion TV and MCM have replaced Saudi Arabia and Abu Dhabi. I was expecting FTV to go CA so why are they joining the RFO bouquet? FTV seems to be on a different time zone to the FTV feed on AsiaSat 2."

John Young, Eleebana, NSW

The RFO bouquet reduction appears to be most pronounced in NSW, perhaps a "space mite" has crawled into the feed horn (see p. 11, here). The FTV feed in this bouquet is intended for North America, is in NTSC, and content is more than a different time zone from As2. If anything, it is slightly closer to soft-porn than the AsiaSat version. Why Saudi and Abu Dhabi replaced? Perhaps because they did not speak French. Dance to the music?

"The Aurora pamphlet provided by Optus says that the Satellite Music Australia (SMA) services radio programme channels and CBAA (Community Broadcasters Association) are available FTA. They are not. I telephoned SMA (1300-366 099) and asked to have my smart card authorised. Their response was, 'What radio station are you?' I explained I was just a poor guy living in the outback who wanted to have radio music in my home. They promised to talk it over with 'the boss' and get back to me. They never did."

A disappointed Aurora user, NSW

SMA is the defacto provider of radio channel services including those on Austar - the same services you cannot get on Aurora. That they would work a deal with Austar to put it into 300,000 + homes and deny service to a smaller group on Aurora makes little sense. CAM versions

"My 520 has 1.13d and 1.10c CAM; TU-DS10 has 1.31f. Is there a difference?"

P. Cook, Queensland

Yes - it could. 520's are notoriously "fickle."

HARDWARE EQUIPMENT PARTS

UPDATE

FEBRUARY, 1999

AsiaSat 3S to be launched by Proton (Russia) will not go up (to 105.5E) February 21 as announced in January - delayed, "sometime in March."

Orion 3 launch - to 139E with extended C + Ku on board, has revised launch window of March 25-27.

Aurora's third transponder is expected to be (B3) Tr 7 with a centre frequency at or near 12.658. Most recently, this transponder has been configured on Western Australia beam, will switch to National. Concerns that this transponder "could" have cross-pole problems in SE Australia from horizontal pay-TV services centred on 12.626 (Tr 14) or 12.688 (Tr 15) seem unfounded; other than obvious centre-frequency offset between polarities, Aurora Tr 3 (12.407) sits opposite pay TV on 12.438 while Aurora on Tr 6 (12.595) sits opposite pay TV on 12.564 (Tr 13) and 12.626 (Tr 14) with no major cross pole problems reported to date (yes - if the installer is not reasonably careful in setting the polarity, there can be interference problems - correctable).

Which receivers for Aurora? The original ex-Galaxy DGT-400 will load the Aurora services but only displays TVSN (FTA on channel 1). Some non-Aurora approved IRDs (such as HSS-100C) will show TVSN and a few of the (FTA) audio service channels (see p. 18 table). We have reports - but no verification - that various Nokia 9500 series IRDs equipped with a CAM and an appropriate Aurora smart card will play everything a 642 - for example - will display.

Irdeto CI (common interface)? First chip sets and software into hands of IRD makers shortly - first show and tell IRDs that do both Irdeto plus other encryption schemes (i.e., common interface) by April. If everything goes according to plan.

MPEG testing on Optus B3, 12.564 Hz, has been in preparation for expansion of pay TV transponders from 3 to 4, thereby making bouquet space for additional Fox channels. Unknown - whether 7 or 8 Optus only pay TV channels being transmitted within existing three transponders will stay, or simply be taken off as a part of the "make room for Foxtel/Foxsat" adventure. 12.626 has been recently loaded with Greek Antenne TV and RAI International - it appears the new "ethnic guys" on PAS-8 won't have a competition free field (see p. 2).

Second Edition. Garry Cratt's "*Practical Guide to Satellite TV*" was released in 1996. In a fast changing satellite world, the ink was barely dry on Version One when Garry began work on a brand new edition. "Practical" is just that - totally written for the hands on type of guy or girl. "Practical" helps you comprehend and make use of things you will find described no-place else in the world. Such as the Australian version of E-Pal, solar outage dates for Australia and New Zealand, and a totally unique and very worthwhile approach to listing operating satellites. Version 2 updates everything important and eliminates things that seemed certain when Version 1 was compiled but somehow did not materialise (remember the DW Net On Air?). Very worthwhile from tel 61-2-9949-7417, fax 61-2-9949-7095 or www.avcomm.com.au.

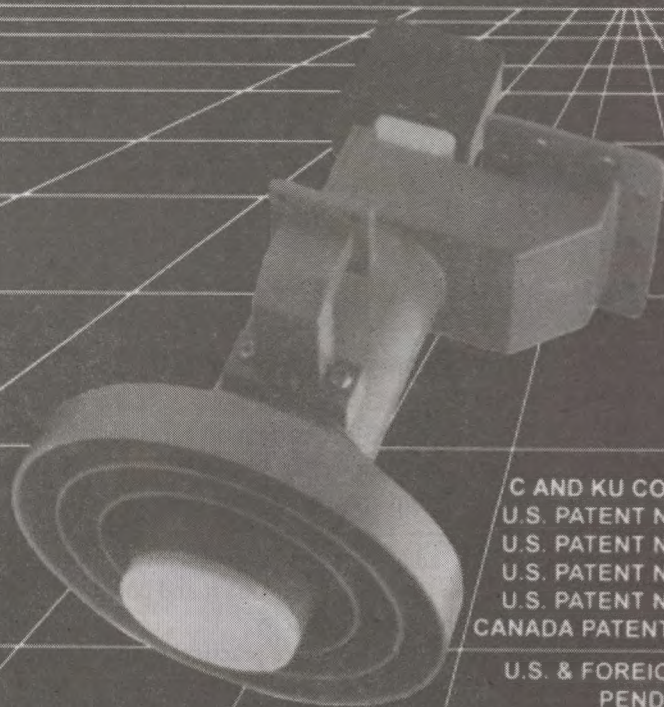
Hyundai HSS700 is new PowerVu and FTA capable IRD available from Kristal Electronics (tel + +61-7-4788-8902). Capable of storing 1,000 digital channels, 32 satellite locations, does PAL-NTSC and NTSC-PAL conversion, Teletext decoding SCPC and MCPC.

Irdeto pirate card report. Now US\$185 each, minimum order of 10, from digitalsales@provider.co.uk. *Big time caution urged here.* A Taiwan firm reportedly has created an IRD that does Irdeto without any card at all (!).

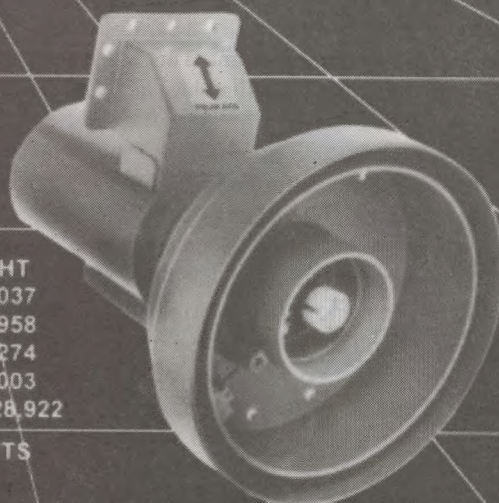
Austar goes cold. Effective 8 February, all new Austar installs involve tech phoning in smart card ident - no more pre-enablement, only "cold" cards. It will be slower!



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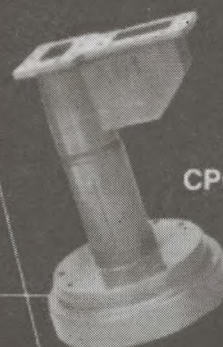
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PAS-8 TURNS ON and THE ENIGMA CONTINUES

There are problems with this report which we will share with you "up front." The only real source for information, PanAmSat, is basically "not talking" which leaves us (and anyone else trying to unravel the PAS-8 story) with half truths, rumours, and deliberately false information floated by competitors of PanAmSat.

Fact One: PanAmSat launched a new 24 transponder C-band and 24 transponder Ku-band satellite built by Loral on November 4th via Russian Proton lift power.

Fact Two: There are no more undisputed facts.

Even the location of PAS-8 is in question. PanAmSat says it is at 166E; NASA reports say it is at 166.5E. Normally 0.5 degrees would not be important. This is not a normal situation.

Rumour One: The satellite has not achieved the original design objectives.

Rumour Two: A plan to provide a "squirt" beam that would allow the Northern California PanAmSat uplink site at Napa to have direct Ku-band connectivity to PAS-8 apparently squirts someplace else. If this has really happened, PanAmSat plans for PAS-8 are significantly jeopardised. Links to Australia and Asia, for pay-TV and Internet, originating in the USA can only be accomplished if Napa can "plug in" directly to PAS-8.

Rumour Three: To work around the missing squirt beam problem, PanAmSat had two choices; find it (someplace offshore between California and Hawaii) and "bring it back" by corkscrewing or tilting PAS-8 (akin to redirecting a very precise search light). Or, install a new "hop" from Napa to Hawaii and link to PAS-8 on Ku from a Hawaiian location.

PAS8 Transponder
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are receiving us at:
booking@panamsat.com

PAS-8 3860/1290 Hz test card slate as received in New Zealand on 3.1m high quality dish; it did not look promising. 3 dB improved picture at end of January was still below threshold suggesting threshold would require 3.8m. dish (30-31 dBw).

The extra link adds many new problems, several tens of millions of dollars in cost to PanAmSat and potentially reduces their overall "throughput" capacity.

Closer to home, there are more practical problems for system installers. If PAS-8 is indeed at 166E (which seems likely - surely PanAmSat knows where it is!), they are 3 degrees west of PAS-2. This means a 3m dish pointing at PAS-2 will find

PAS-8	2-C	4-C	6-C	8-C	10-C	12-C	14-C	16-C	18-C	20-C	22-C	24-C
Horz	3,740	3,780	3,820	3,860	3,900	3,940	3,980	4,020	4,060	4,100	4,140	4,180

↑	↑	↑		↑	↑		↑	↑		↑	↑	↑
	Disc	Disney		Cal P-V			CNN	NHK				TC\$

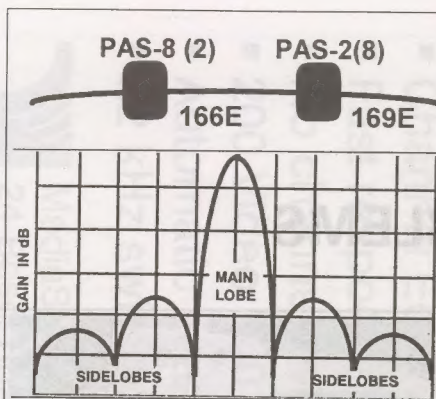
PAS-2	2-C	4-C	6-C	8-C	10-C	12-C	14-C	16-C
Horz	3,730	3,790	3,850	3,915	3,980	4,040	4,100	4,165

↑ Digit.
↓ Anal.

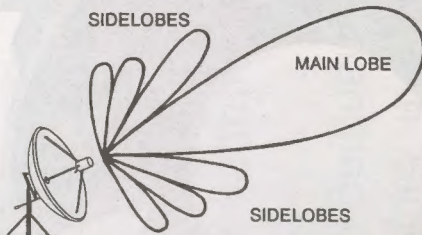
PAS-8	1-C	3-C	5-C	7-C	9-C	11-C	13-C	15-C	17-C	19-C	21-C	23-C
Vert	3,720	3,760	3,800	3,840	3,880	3,920	3,960	4,000	4,040	4,080	4,120	4,160

↑	↑	↑	↑	↑		↑	↑	↑	↑		↑	↑
CCTV	BBC	Napa	ESPN		JET	CNN		NBC			HK P-V	

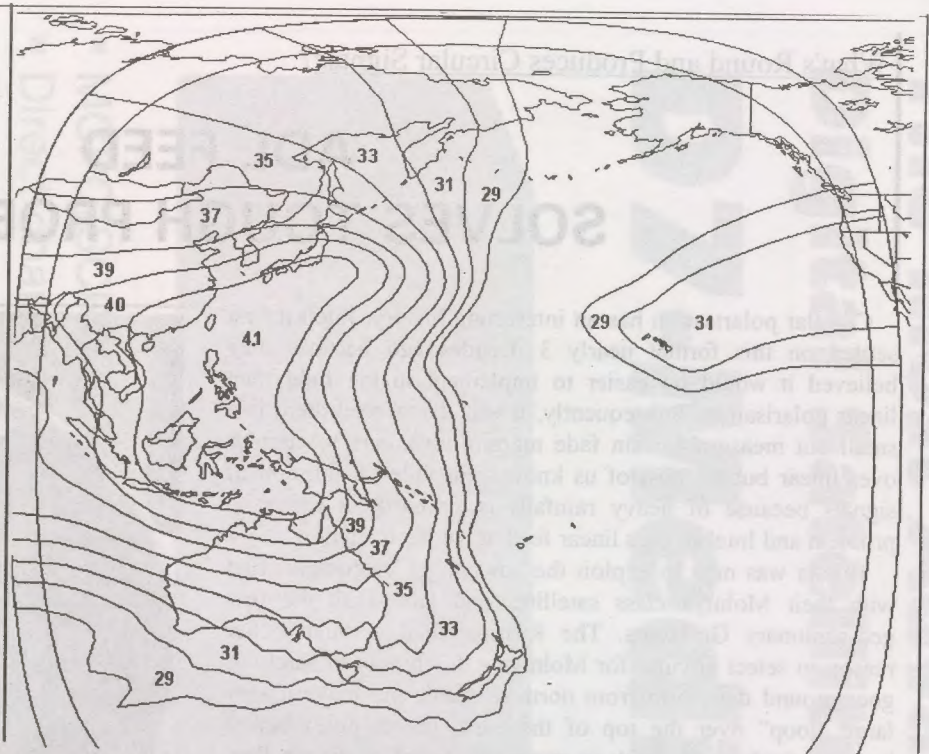
PAS-2	1-C	3-C	5-C	7-C	9-C	11-C	13-C	15-C
Vert	3,730	3,790	3,850	3,915	3,980	4,040	4,100	4,165



With 2 and 8 only 3 degrees apart, side lobe control is additional concern



NOT "official" but close to it. PanAmSat PAS-8 horizontal coverage map released late in January following tests conducted during December/ January. To interpret antenna size versus lobe patterns, use table below. Note that not all of your "adjacent satellite" problems are solved with a larger dish - 10'/3m dish has its first sidelobe +/- 2.9 degrees from main frontal lobe peak.



PAS-8 signals very near the top of the first sidelobe, 2.9 degrees away. And that means a strong PAS-8 signal on the same polarisation and in the same frequency range will be 12dB or less "down" reference the PAS-2 signal. And this cuts both ways. See tables, graphs to left indicating where existing PAS-2 Hz and Vt signals will fall within a receiver tuned to PAS-8.

Couple this dish sidelobe problem with the probability PAS-8 C-band signals will be weaker than PAS-2 and you have some very interesting installer challenges. A 1.8m dish installed for NHK digital on PAS-2 is likely to get double-hit: (1) It is *too small* to capture enough NHK signal from PAS-8, and, (2) When pointed at PAS-8, the 3 dB beamwidth is 3 degrees. That means PAS-8 signals on a 1.8m dish will only be 3 dB stronger than the not-wanted PAS-2 signals.

The combination of lower signal levels and the inability of dishes smaller than 3m to discriminate between the desired signal (whether PAS-8 or 2) and the non-desired signal (PAS-2 or 8) pretty much dictates that from this point onward, any dish smaller than 3m for reception from either PAS-2 or PAS-8 will be a bad choice. As PAS-8 loads up in services, more and more signals on both birds will "clash" at feedhorns on dishes smaller than 3m (and even 3m may not be large enough in a worst-case scenario).

This situation is further aggravated because PAS-2 is a 16 transponder (8 vertical, 8 horizontal varying from 54 to 64 MHz wide) satellite while PAS-8 is a 24 transponder satellite (all 36 MHz wide). As the chart at the bottom of the preceding page illustrates, transponder "centres" overlap which makes it almost impossible to "spectrum manage" the collision of interfering signals between satellites for small dishes. PanAmSat has maintained from the launch of PAS-2 that it was "not a DTH bird" and now that PAS-8 is sitting next to it, we have painfully obvious reasons why this is so.

Who loses here? Probably too early to be certain but NHK viewers who are paying money for the NHK Premium package certainly are going to be disadvantaged by what is happening. As a "group," their dishes are too small to function properly in a 3 degree PAS-2 to PAS-8 environment. For commercial (cable, broadcast) users, PanAmSat is supplying a new dish (typically 3.1m in Australia, 3.8m in New Zealand rising to 5m in the Marshall Islands) to be equipped with a clever dual-bird feed system; one reflector, two closely spaced feeds, 4 LNBs to simultaneously take 2 and 8 signals. PanAmSat admits that PAS-2 viewers in Fiji and Tahiti will lose services that are to be only available through PAS-8; the new satellite simply does not reach those areas. We'll have more to report as this unfolds, in March.

Dish Size	Typical gain	3 dB beamwd	12 dB beamwd	1st sidelobe	1st null
1.8m	35.1 dB	3 deg	6 deg	+/-4.9 d	+/-3.9 d
2.4m	37.6 dB	2.3 deg	4.5 deg	+/-3.7 d	+/-2.9 d
3m	39.5 dB	1.8 deg	3.6 deg	+/-2.9 d	+/-2.3 d
3.7m	41.1 dB	1.5 deg	3.0 deg	+/-2.5 d	+/-1.9 d
4.3m	42.3 dB	1.3 deg	2.6 deg	+/-2.1 d	+/-1.7 d

What SatFACTS Observers are Saying

"P4 on 4m solid, 17 degree LNB" (Waipu, NZ). "P4 on 2.4m, slightly weaker than CNNI PAS2" (Perth, WA). "About 5% stronger than CNNI on PAS-2" (Wollongong, NSW - yes, but remember CNNI is 1/2 transponder on PAS-2 and thus 3dB power backed-off-ed.) "Level increased from 1495 to 1663 28/1; CNNI PAS-2 is 1660" (Qld). "P3-Not useable 3m" (New Caledonia). "PAS-8 stronger than PAS-2 CNNI on 1.8m" (Queensland). "P5 on 2.3m" (NSW)

ADL FEED SOLVES TOUGH PROBLEMS

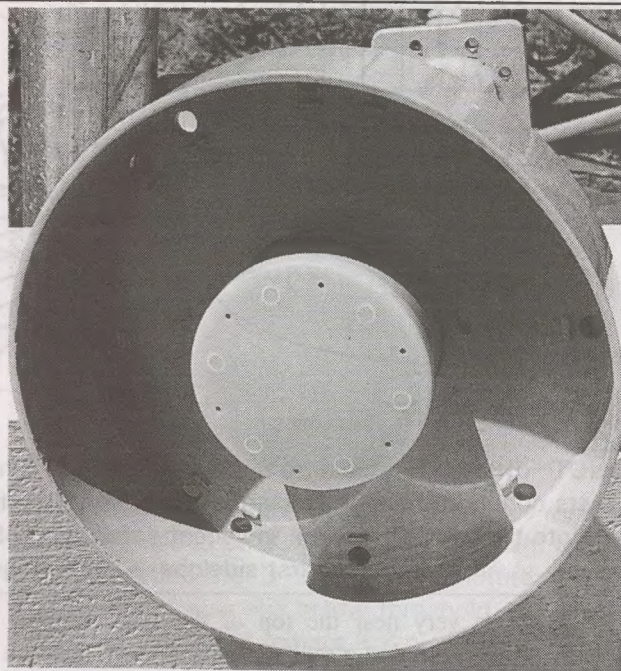
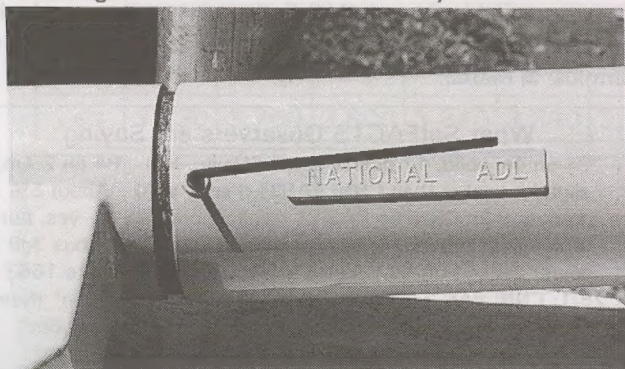
Circular polarisation has an interesting history. Intelsat first settled on this format nearly 3 decades ago because they believed it would be easier to implement in the field than linear polarisation. Subsequently, it was discovered there is a small but measurable rain fade margin advantage to circular over linear but as most of us know, rain fade (absorption of signals because of heavy rainfall) is primarily a Ku band problem and Intelsat uses linear feed at Ku band anyhow.

Russia was next to exploit the advantages of circular, first with their Molniya class satellites and later with the first geo-stationary Gorizonts. The Russians had a much better reason to select circular for Molniya - this family of satellites goes around the world from north to south and make a very large "loop" over the top of the earth (north pole) before heading south again. With so much movement of the satellite, full time tracking is required and when you are tracking, the apparent polarity changes on you. It is enough of a challenge to track the satellite's movement without having to also compensate for a change in polarisation over time. Circular is as it sounds - a circle. So while the start and stop point of the polarised "circle" may vary as Molniya moves through its pathway, a circle always looks like a circle on the ground which eliminates the need to track the satellite's polarisation.

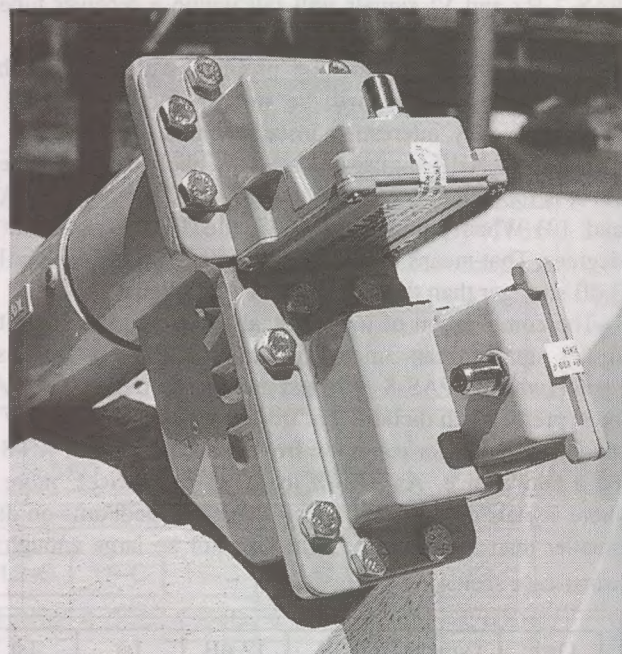
All of this is unimportant to an installer who simply wants to make the circular polarisation "play" to maximum signal level. Think of circular as you do linear; with the feed positioned properly, the signal at the feed output flange is "in line with" either right hand circular or left hand circular. The waveguide "mouth" of the feed is a circle (it is round) so you can visualise that a circular signal will have no difficulty "fitting" inside of the round waveguide. If it rotates (turns around an imaginary centre) such that it corkscrews in a clockwise direction (as you would view it from the feed mouth or entry point), we call it right hand circular (RHC). If the direction of motion is counter clockwise, we call it left hand circular (LHC).

Now the confusing part. The probe on your LNB is a straight (typically gold coloured) rod or "whip" found inside of the LNB's mouth. It is a linear (that is, not circular) device. What a

Rotating rear of feed to obtain proper polarisation alignment involves Allen family set-screw.



ADL's approach to capturing energy from reflector surface (above) - Twin LNBS for C-band service bolted to rear of feed flanges (below).

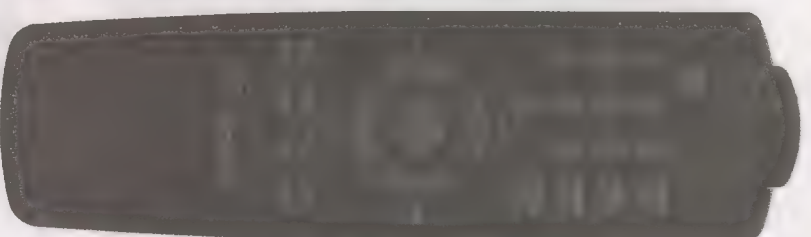


circular feed must do is somehow - magically - convert the circular motion of the incoming wavefront to a straight up and down (vertical) or straight side to side (horizontal) signal. In other words, "force" the circular signal to reformat to linear just before it arrives at the LNB probe.

The feed does this by adding "bumps" or "humps" inside the mouth of the waveguide proper. These "quarter wave sections" interrupt the circular motion of the wavefront long enough for

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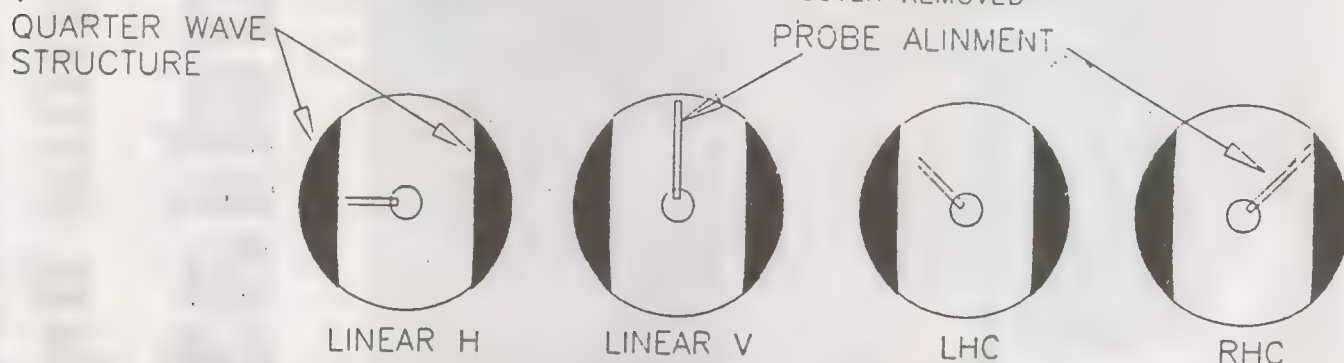
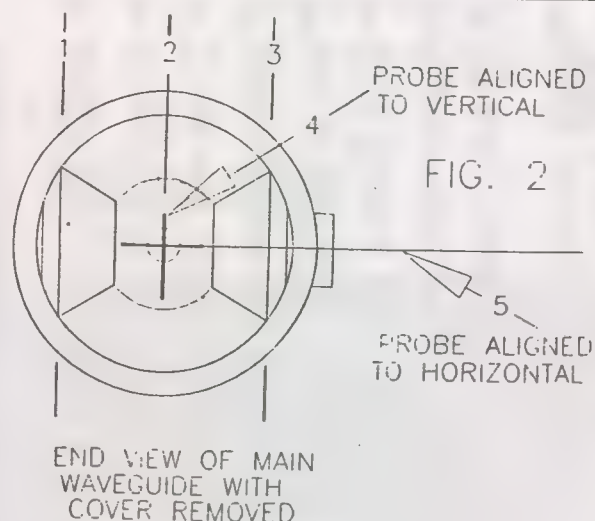
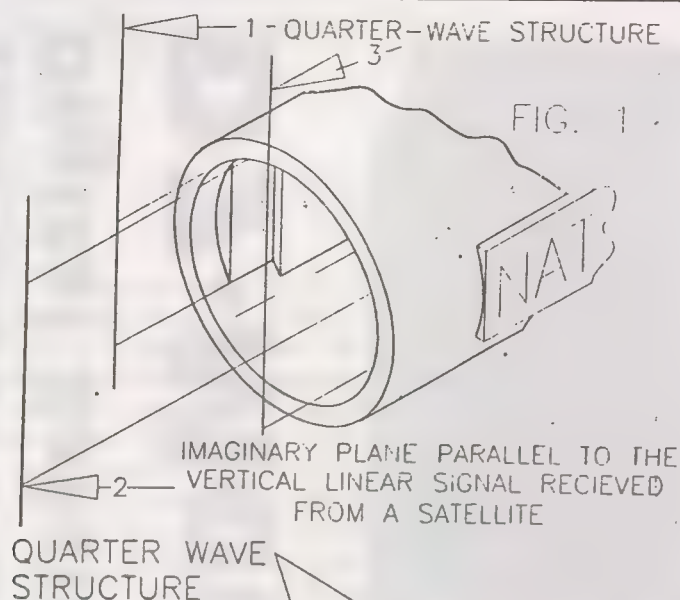


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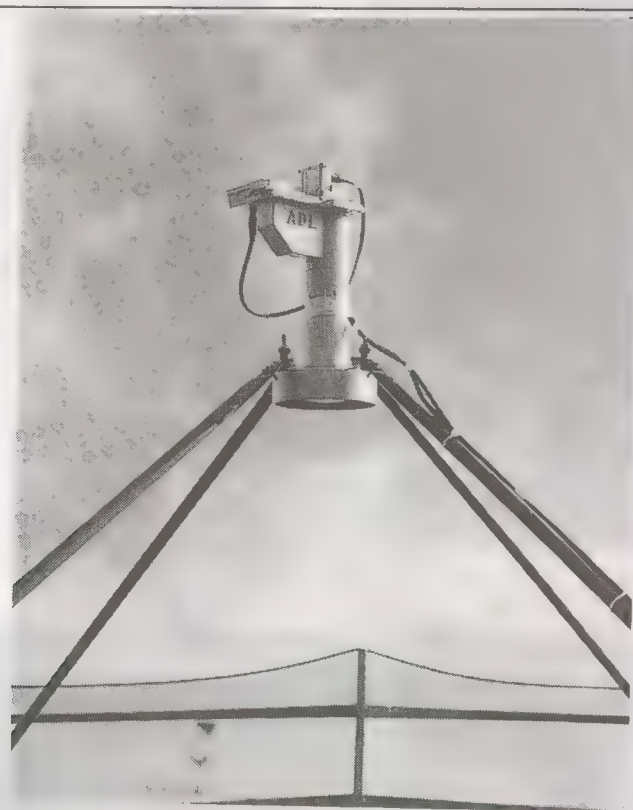
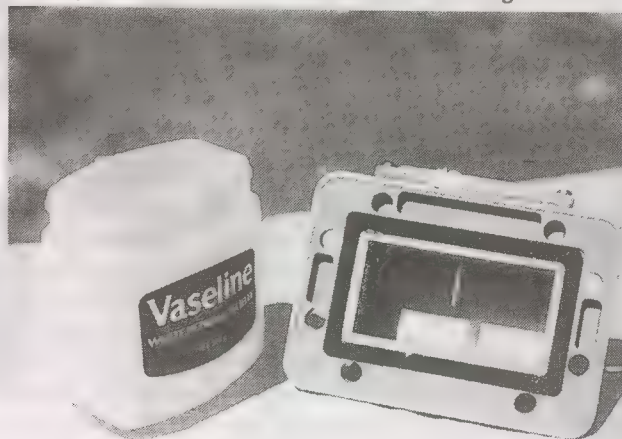


the forward moving signal to "fall over" on itself. The quarter wave section "trips" the signal, and when it gets up again to keep moving towards the probe, it is "limping" in a linear fashion. And now it matches the probe on the LNB and everyone is happy.

The ADL CP OR-100 family of feeds is a part of a professional line of feeds manufactured by ADL (1). The feedhorn front portion is designed to match the f/D of the dish you will be using - you need to specify the dish focal length to diameter when ordering. This is a heavy duty feed designed for a lifetime of service - it needs a solidly built feed support structure (a buttonhook without some form of guying would be a mistake). The LNBs in our dual pole (RHC + LHC) model shown here bolt directly to the feed proper using stainless steel hardware that matches the pre-tapped holes on the feed. This eliminates separate nuts to match your LNB mounting bolts/screws.

We put our feed into service on Intelsat 701 (180E) to recover separately RHC and LHC digital signals on a 4.5m dish. The performance is exceptional and the mechanics spot-on. This is one feed you won't have to worry about.

Sealing LNB to feed flange requires suitable neoprene/rubber gasket which fills cavity on LNB to keep moisture out. *Vaseline*? Ensures good fit.



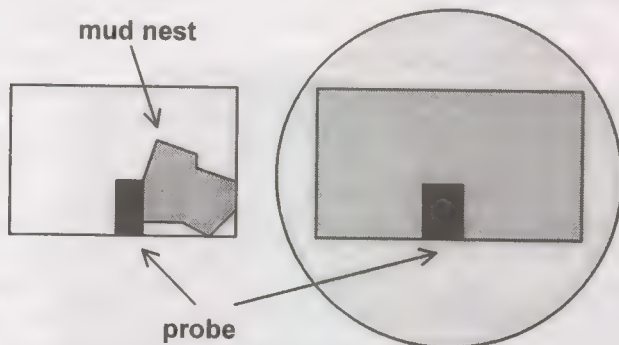
Feed support and positioning is all important - this is not a lightweight feed and optimum performance depends upon good mechanics.

GETTING THE BUGS OUT OF THE SYSTEM

While we are on the subject of feeds (see preceding pages), have you heard the one about the dish that quit working in totally dry weather, no wind, and no sign that anything electronic had failed?

This is a true story. Bright, sunny weather, dead calm, temperature in the high 20s Celsius. A 1.2m dish (Ku functional) equipped with a 0.6 dB noise figure LNB and separate (from the LNB) feed. Between the feed and the LNB, a round (circular) section of waveguide with flanges on both ends to allow bolting of the scalar family feed and the LNB to the waveguide.

Normally this dish system provides BER (bit error rates) in the medium 5s - well above any "threshold" point. Suddenly the service quit, dead away. The weather being what it was, the first things to check were (1) that the LNB was still getting power (spectrum analyser showed it to be drawing 110 mils, about normal); (2) that the LNB was working properly (they do "fall over" on occasion, quite without warning). The



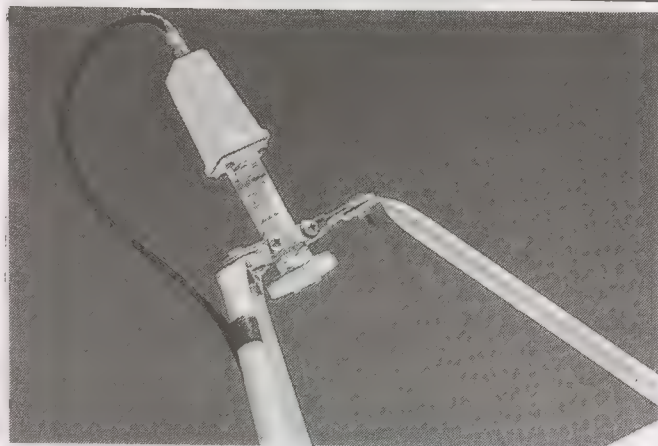
displayed spectrum was unusual. Although normal reception produced carriers 15 dB or more above the LNB's noise floor, all we could see was a straight slightly jagged line across the bottom of the screen. There were two quick possibilities:

- 1) The LNB had lost a gain (amplifier) stage and it was putting out nothing but noise, or,
- 2) The dish was mysteriously pointing off into the sky away from any satellite!

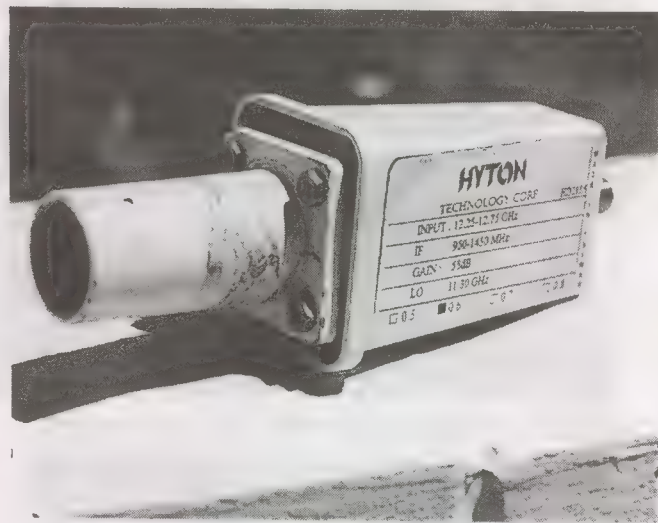
Inspect the dish mount and bolts - everything is tight. Climb a ladder and take a look at the LNB. Yup, still where it was supposed to be - no bullet holes apparent (that *has* happened!).

This particular LNB + waveguide + scalar ring have the unique ability to unscrew apart. About half way along the round waveguide, it "breaks" in two by unscrewing apart. So you can leave the scalar ring and the front half of the waveguide section in place, unscrewing the rear portion of waveguide with the LNB attached. We did this and rotated the waveguide so the sunlight shone into the opening, down to the probe in the LNB. What is this?

Normally the gold coloured probe rests in a sea of creamy white standing out like a sentinel in the night. Not now - the entire flange area where the LNB connects to the end of the

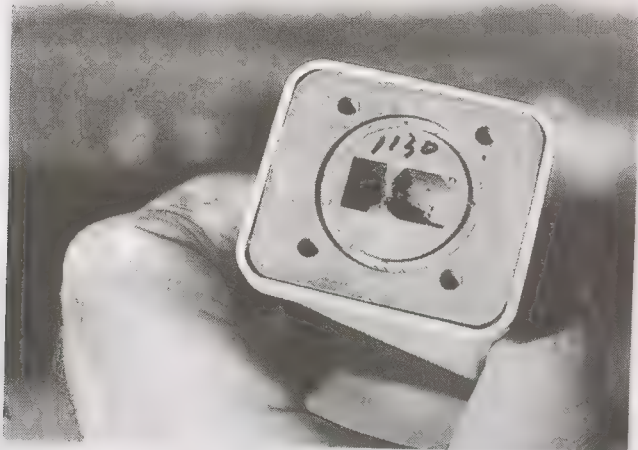


Pretty standard arrangement - LNB, slightly non-standard waveguide throat, scalar ring feed (above). Reason for extended waveguide tube - LNB can be "unwound" (screwed out of) feed tube for quick replacement or check (below).

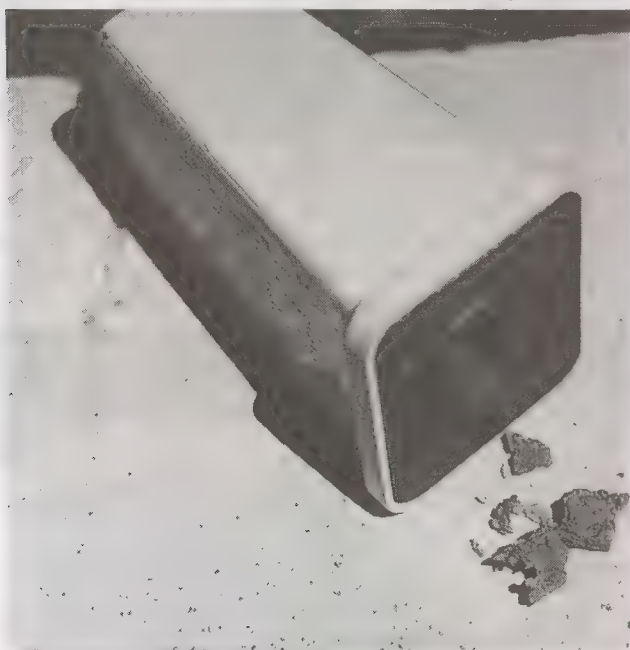


The culprit - inside tube, left centre

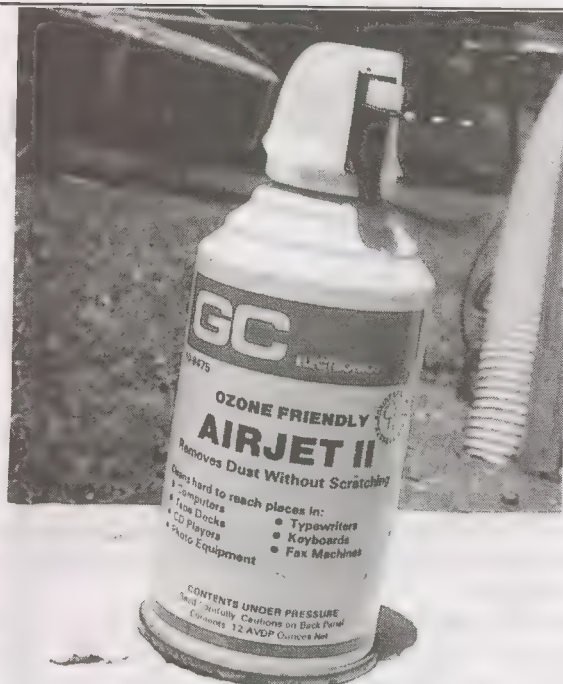




Bridge of mud is clearly visible, filling approximately 40% of waveguide cavity (above). The quantity of dried mud after removal in front of cavity (below).



Quick fix after second attack - plastic food wrap covers feed and attractive feed opening (below). Loss from temporary cover? Not measureable.



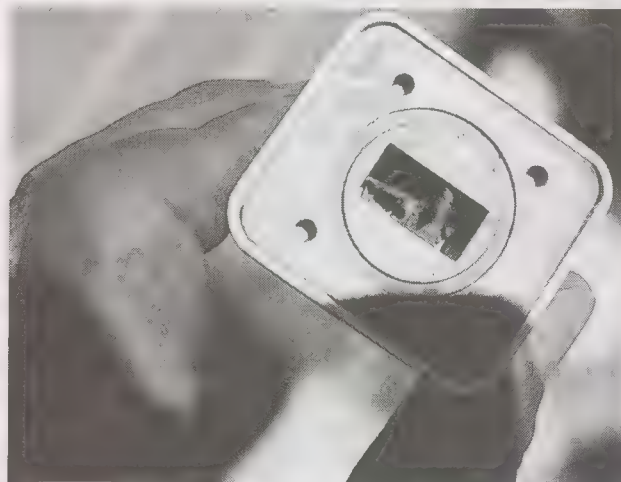
Compressed air (gas) in a can is good first level attempt for spiders and dead insects but if the mud is stuck to the walls, it won't work.

waveguide is dark, almost muddy looking. The probe is no place to be seen!

Next step - remove the four tiny self tapping screws that attach the waveguide to the flange on the LNB. As the two come part, foreign matter trickles to the workbench. On close inspection, it is almost dry mud. And buried inside of the LNB feed prove cavity, there is the probe hiding behind a wall of semidried mud.

Wasps, honey bees love dark, windless spots to build nests. Getting the nesting material out of the LNB is tricky - the probe is delicate and sensitive to static electricity. A cotton swab (never anything metallic) will help. Use no water nor alcohol!

Back together everything worked normally - for three hours. Then it happened - *again*. A new mud dobber nest!. This time, close off the opening to the feed mouth with a quick fix - a piece of cellophane from the kitchen. Fortunately, the wasp and spider season is relatively short lived.



Second "attack" created entirely new freeform sculpture - white dot in centre of waveguide opening is LNB probe at rear of cavity.

Digital power, but how much?

As most digital Television signals have wider bandwidth than the typical 1MHz measurement bandwidth of a TV measuring instrument, using an analogue instrument to measure the power of digital TV transmissions has been a science lacking in precision, until now.

Unaohm has developed an automatic Digital Channel Power measurement system. The user marks the limits of the channel to be measured and then the instrument quickly makes a large number of power measurements across the channel, from which an effective average is calculated, and displayed in a digital format.

The *new* EP318 from Unaohm offers a wide range of standard analogue and digital TV measurement functions with precision Bit Error Rate measurement options.

If you want instrumentation that can keep you in touch with what is really happening in your systems, consider Unaohm. From more than 60 years experience in the manufacture of electrical measurement instruments and a leading position in the development of DVB compliant digital TV measurement tools, Unaohm is now the choice of TV installers and TV spectrum management agencies the world over.



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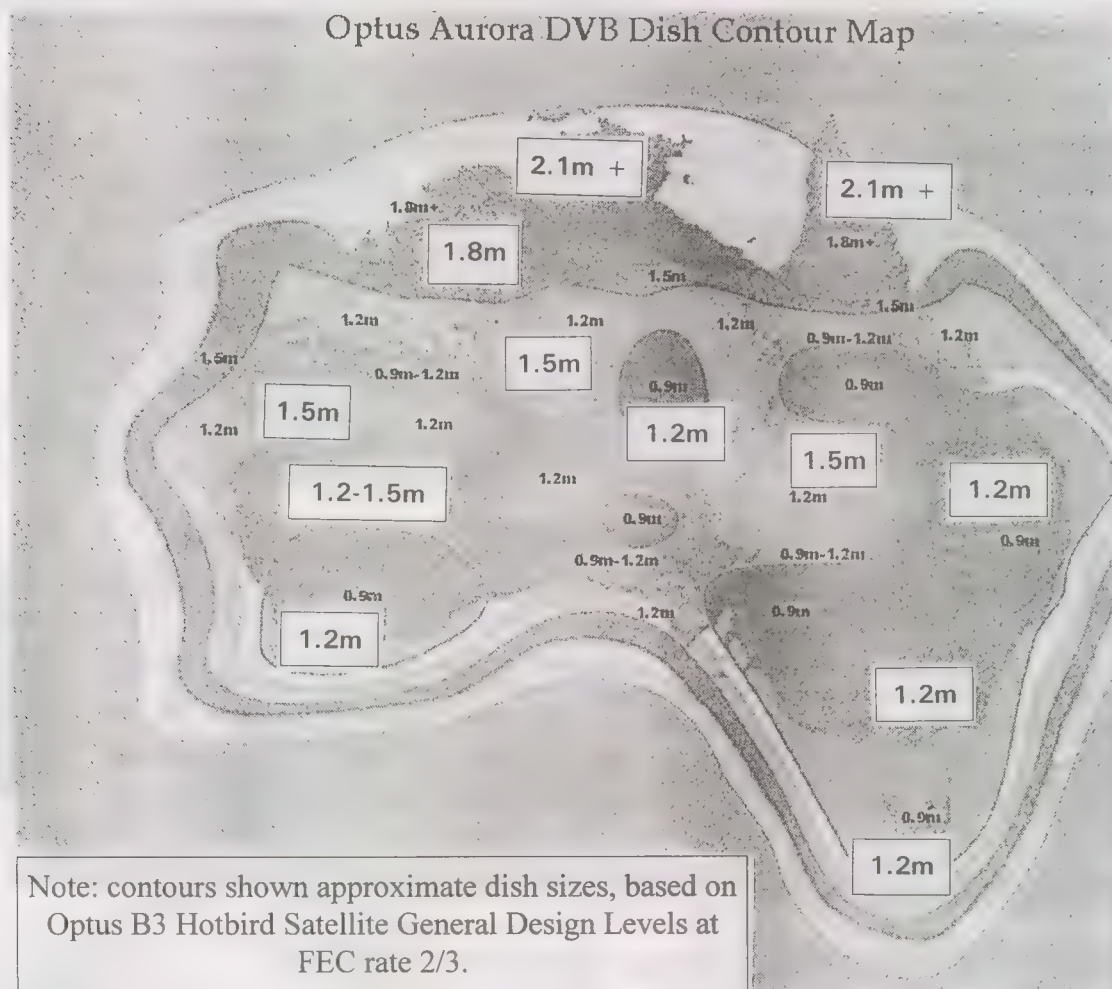
Editor's note: This is a multi-part report. In March, we will trace the history of RTIF after first bringing you to the current status of the Optus created conversion from B-MAC analogue to a version of MPEG-2.

There are two schools of thought relating to the transition from analogue to digital. One school holds the conversion to be not dissimilar to the original introduction of television, and the reconfiguration of radio which preceded television. This same group also suggests that digital is nothing more for consumers than the addition of colour to pre-existing black and white.

The second school believes digital television is *not* about television at all. It is about datacasting, the ability to link every home with a television set or computer to the world's information network. Television? It is merely a segment of the "data stream" and perhaps in time it will disappear from the data stream entirely.

Group one sees nothing ominous about digital. Group two sees digital as different from existing information delivery systems as the Gutenberg printing press was from modern high speed printing plants.

The Rural Area Broadcasting Service (RABS) was an honest attempt by Australian politicians to provide television beyond population centres large enough to support their own TV transmitters. We tend to remember the introduction of B-MAC television technology for rural Australians in isolation. This is a mistake. RABS was but one small cog in the national plan to create domestic *satellites* for service to Australia, and the Australian satellite plan was born primarily from political fear. Indonesia had pioneered domestic satellites (1976) and unless



* / **factoid** -*n.* an assumption or speculation that is reported and repeated so often that it becomes an accepted fact; a simulated or imagined fact.

Aurora recommended dish size. Map was drawn when FEC was assumed to be 2/3; with 3/4 also in use, dish size goes up approximately 1 "size" (.9 becomes 1.2). We show FEC 3/4 dish sizes as

Australian got its own - well, Indonesia was to be viewed with great suspicion. Australian ended up utilising Ku-band at a time when everyone else - including much feared Indonesia - was using C-band. There were primarily political, not engineering, reasons for this decision.

To make domestic satellites happen, a long fanciful list of possible applications was created. Rural television was but *one* item on that list. And once created and operational (1985-86) it was largely forgotten for a decade. In 1998, someone noticed there were only 13,000 home B-MAC terminals operating. (1)

Because a cultural, over the air, "invasion" was feared by Australian politicians in the early 1980s the critical decisions relating to the first Aussat satellites were made at the highest political and military levels. Australian satellite users would be "discouraged" from tapping into the C-band signals floating about, and Australia's Ku band services would be closely "guarded" to prevent any significant "leakage" beyond the shoreline; especially to the north. PNG, still an Australian concern during the period of Aussat planning, presented a special problem. How would you cover PNG but *not* allow signals to slip into Indonesia?

The political and foreign affairs experts controlled the design of the first Australian satellites, but by the introduction of that awesome new "digital technology" it would be telecommunication bureaucrats who assumed leadership roles. Technologists who lived on the leading edge of the explosive new digital data streams saw in satellite delivery not merely the limited and confined world of moving pictures and sound but the opportunity to "connect" every home in Australia to *every* other home - "*in the world*," they would mutter under their breath. For a country just emerging from isolation and a manic fear of Indonesian intentions, this was pretty heady stuff. After decades of "protecting" citizens from the social ills common beyond their own shoreline, the very concept that any home could connect to any other home with whatever content they wished was bordering on heresy. So the telecommunication bureaucrats made a "soft list" of digital applications they believed "safe" to enunciate and then on 3 by 5 cards kept tucked away in shirt pockets under their coats, a "hard list" of their *real* intentions. The soft list was for press interviews, conferences held in public. The hard lists only came out behind closed doors.

During these formative policy years, Optus was uniquely positioned to direct and guide the long term policies leading to a new millennium of telecommunications. They had the technical expertise, the satellites (which were owned outright at the time) and virtually all of the commercial contracts and contacts to make it happen.

But then something happened. Optus became entangled in a pair of new (for Optus) business ventures (cable telecommunications and carry-it-with-you-telephone). In one, it made money hand over fist. In the other, it lost virtually as much as the other was making. From 1995 until the present, management and operational policies at Optus have been increasingly unstable as top salaried administrators have appeared with the regularity of each new moon. Policies created on the first of the month are replaced as often as the administrators. Those in place before the revolving door phase

1/ However, it is important to remember that B-MAC decoders linked hundreds of rural, terrestrial TV repeaters or translators providing far more than 13,000 homes with first-time television.

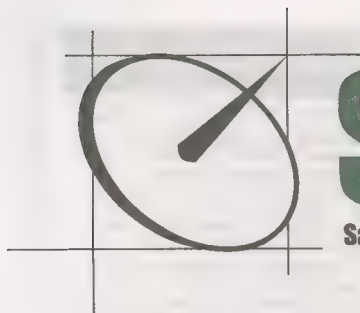
AURORA TV Channels - present & planned

1	TVSN	Television Shopping Network
2	Hori	Horizon Learning Channel
3	PKN	Enc.-Pacific Knowledge Net
4	BTV1	Enc.-Optus Business TV 1
5	BTV3	Enc.-Optus Business TV3
6	ABC-SA	ABC Television South Australia
7	(SBS)	(test - March 7th scheduled start)
8	no use	(future use)
9	no use	(future use)
10	no use	(future use)
11	no use	(future use)
12	no use	(future use)
13	no use	(future use)
14	no use	(future use)
15	no use	(future use)
16	no use	(future use)
17	no use	(future use)
18	no use	(future use)
19	no use	(future use)
20	ABC-WA	ABC Television Western Australia
21	GWN-TV	Golden West - only for licensed area
22	WLK	Western Australian Education
23	(enc)	(scrambled)
24	(enc)	(scrambled)
25	(enc)	(scrambled)
26	(enc)	(scrambled)
27	(enc)	(scrambled)
28	ABC-NT	ABC Television Northern Territory
29	IMP-TV	Imparja - only for licensed area
30	IMP PTTV	Enc.-Imparja "business" channel
31	(enc)	(scrambled)
32	(enc)	(scrambled)
33	(enc)	(scrambled)
34	(enc)	(scrambled)
35	BTV2	resumed here Feb 5/was ch. 5

Notations: Changes in the Aurora line-up are almost daily - something you learn only if you reload it on a daily basis (!). For example, BTV2 (Ch 5) was shut down February 3, and restarted as ch. 35 on Feb 5 after moving everyone "down one."

began had been left to survive on their own, usually with very little or no support from administrators who seldom stayed on the job long enough to figure out what projects such as RABS and Aurora even did.

The Aurora television and datacasting aspect of the conversion from analogue B-MAC to digital was one such "minor" aspect of the overall digital conversion plan. In 1996, neither the hardware nor the software to make it happen existed. But there was every confidence that "when it was



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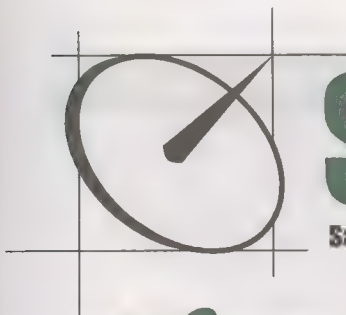
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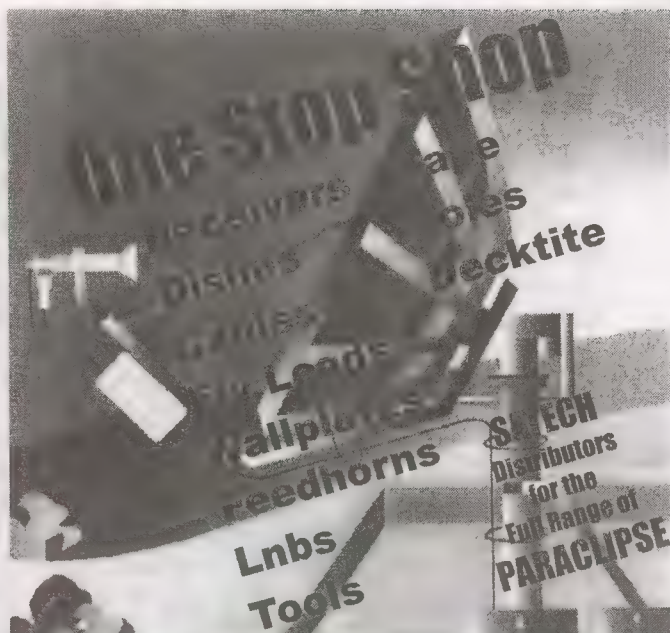
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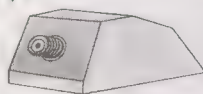
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- Auto Focus
- Inclined Orbit Tracking

wall plates



Single "F" outlet
plate with bracket
SC1301



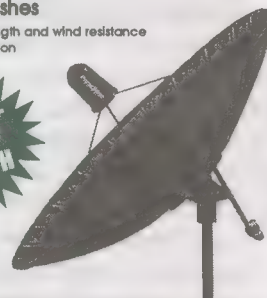
Skirting Board
"F" outlet plate
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Satech - Sydney -Tel: 612 9723 7100

required" it would be available. The initial quantity would be small (under 15,000) and because Optus already had established business relations with each of the existing B-MAC distributed programme providers, nothing seemed to be unmanageable. A quiet project, housed in a nondescript office area, quietly implementing a master plan.

But bad fortune would enter the project, first with software and then with hardware. Delays would be piled upon delays, and a talented competitor in the form of Scientific Atlanta emerged with the totally unexpected partnership of Optus telephone competitor Telstra. From late in 1997 until this present day, very little concerning the Aurora transition has been orderly, well managed or satisfactory. Aurora's original intent - to be a datacasting service of which television was a very minor part - has been taken *hostage* by the failings of the television segment.

Current Overview

Although many words have been written (here) about real and in some cases imagined problems with the receivers selected by Optus for the television segment, in actual fact the UEC 642 IRDs have been *mostly* exemplary. Virtually every delay, every malfunction to date has been created by the inability of Optus to make the Aurora data stream sent to the satellite function in the manner intended. Imparja's late start for central and northern territory, South Australia's late start for ABC and SBS, Queensland's later start for TAL and the ABC + SBS services, New South Wales' later yet start all trace back to an imperfect data stream. The early-February operational status of Aurora TV and radio is shown here in table form. Only Optus is brave enough to place hard dates on *when* the missing digital services will finally be functional.

In the hardware area, there is one nagging, not yet fully solved, challenge. While a UEC 642 may be a perfectly acceptable "home" receiver, it is not suitable for use at an unattended, remote relay site that feeds satellite to a terrestrial TV transmitter. For more than a year, Optus has pushed suppliers to create a semi-professional IRD that has a suitably robust power supply, adequate ventilation, and a "come back where you were" memory in the event of power failure, for use at terrestrial rebroadcast sites. Some sites have been forced to install NTL 3000 IRDs for this purpose, an option no longer encouraged because NTL is phasing out the 3000 model and is unlikely to support it technically when production ceases. This has left rebroadcast sites with almost no options - some have pressed a UEC 642 into (temporary) service accepting that unattended transmitter sites may cease to deliver services for hours or days at a time when something shuts off - until a human being can reach the site to restart the IRD.

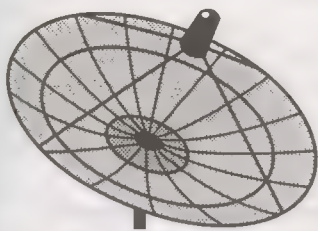
Optus, meanwhile, has pressed ahead with expansion of the Aurora *concept* and as the technology bureaucrats surmised on their 3 by 5 cards years ago, is finding a sizeable and enthusiastic market for digital narrowband services that work into low-cost IRDs such as the 642. Aurora is planning new (a third as we go to press, more to follow) transponder in response to the "demand" for private datacasting networks nation-wide. In reality, Aurora is turning out to be a *bigger* success than even the 3 by 5 cards predicted, despite its problems. The unfortunate side effect has been further delays for the television conversion from B-MAC, and, in the midst

AURORA Radio/Audio Services - 05-02-99

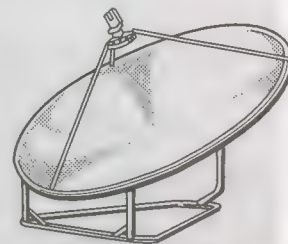
1	R1	Contemporary-/ Sat. Music Aust./enc.
2	R2	Aria 100-/Sat.Music Aust./enc.
3	R3	Cool Vibes-/Sat. Music Aust./enc.
4	R4	Classic Gold-/Sat. Music Aust./enc.
5	R5	Country Beat-/Sat Music Aust./enc
6	R6	High Energy-/Sat. Music Aust./enc.
7	R7	Rock Radio-/Sat. Music Aust./enc.
8	SMA Bus1	Enc.-Woolworths /SatMusAust
9	SMA Bus2	Enc.-Bus. Two/Sat.MusAust
10	no use	
11	NIRS	Enc.-Nat. Indigenous Radio Svc
12	RPH	Enc.-Print Handicapped Radio
13	BBC WS	Enc.- BBC World Service
14	CBAA	Enc.-Comm. Bcst. Assoc. Aust.
15	ABCFM/sa	ABC Classical South Australia
16	ABCRN/sa	ABC Special Info South Australia
17	ABCRR/sa	ABC Regional South Australia
18	UCB	Unknown (new 28-1-99)
19	no use	
20	REF Tone	audio tone for reference/test
21	RABS tone	trans. deviation ref. 400Hz. -18 dBm
22	ABCFMwa	ABC Classical Western Australia
23	ABCRNwa	ABC Special Info Western Australia
24	ABCRRwa	ABC Regional Western Australia
25	990AM	Enc.-Sight impaired info radio
26	(enc.)	(unknown)
27	ABC JJJ	Youth radio-temporary channel
28	ABC PNN	News and Parliament - temporary ch.
29	(enc.)	(unknown)
30	(enc.)	(unknown)
31	(enc.)	(unknown)
32	ABCFMnt	ABC Classical Northern Territory
33	ABCRNnt	ABC Special Info Northern Territory
34	ABCRRnt	ABC Regional Northern Territory
35	IMP R1	Enc.-CAAM Radio/8KIN Alice Spgs
36	IMP R2	Enc.-Teabba Radio Darwin
37	IMP R3	Enc.-SPYM Umuwa
38	IMP R4	Enc.-NT TAB
39	IMP R5	(unknown)
40	IMP R6	(unknown)
41	IMP R7	(unknown)
42	(enc.)	(unknown)

Notations: enc. means encrypted although some audio services are automatically available as companions to TV services (for example: IMPR1, R2 and R3 available to Imparja TV viewers).

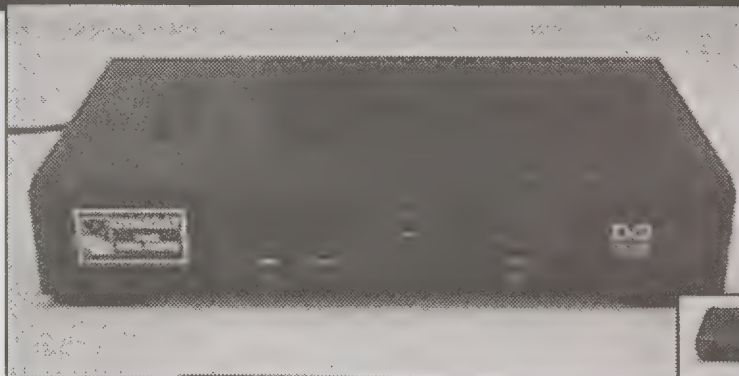
of life and death negotiations with Foxtel over the future of DTH satellite TV, a realisation that if they can't get a relatively small quantity of digital IRDs functioning for RABS, this is no time to be launching a nation-wide Optus consumer satellite package in competition to "the fox."



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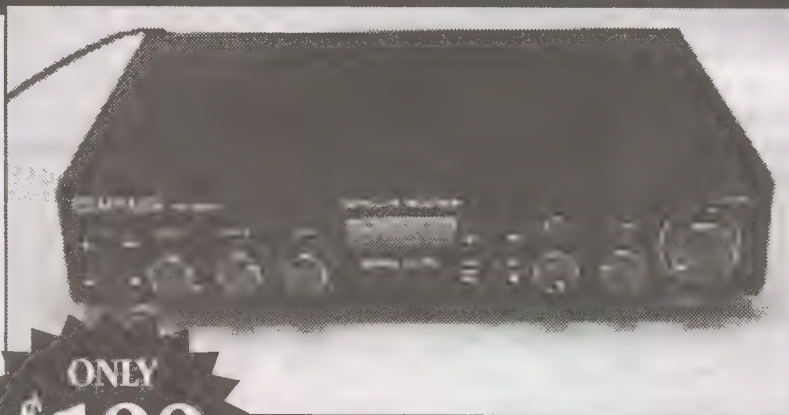
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Commercial Opportunities

An announcement the ABA (Australian TV and radio regulator) is preparing to allow anyone who lives in a disadvantaged location to gain satellite access to commercial TV reception for the national 7, 9 and 10 networks could turn out to be the most important new business opportunity for satellite installers of this decade.

Galaxy, then Austar and Foxtel/FoxSat have produced very big volumes of installer business but with typically thin dollar margins for each installation. Coop's Technology Digest (January 27) reports one group (not all!) of contract installers is being paid between A\$110 (new domestic installation, wall mount) and A\$121 (domestic, fascia mount) per install. Very experienced installers over a six day week can, *if everything goes well*, install up to 30 systems. That works out to between \$3,300 and \$3,630 - more if more than one outlet goes to each installation, less if a service call is for some purpose other than installing a new dish system (such as, A\$35 for a service call that involves replacement of an LNBF).

\$3,300 sounds like quite a take for six days work; in a 4.3 week month, it grows to \$14,190. Keep that up for an entire year, never take a day off and your bank account has taken in \$171,600.

The interesting business aspect of this is the amount paid to the installer on a contract basis (set fee per installation) covers labour and consumables (tape, clips, staples, usually the dish mounting mast which must be purchased by the installer out of the contract fee). The installer remains responsible for his own vehicle, test equipment, cell phone, (\$10,000,000 Public Risk) insurance, accounting records and everything else that goes with business overhead. So let's be practical. You do not five a day but three and you don't work on Saturday. Now we have 15 each week or \$1,650 weekly, \$7,095 monthly, \$85,800 per year if you work all 52 weeks. If we look at the costs involved

for the installer, including the vehicle running expense and travel time, it is unlikely the net per installation will exceed \$80. If the install locations are widely scattered, this cuts down the number you can do in a day and increases the installer overhead per installation.

At \$80 "profit" (net of expenses would be a better phrase than profit), the installer is taking in \$1,200 per week, \$5,160 per month, \$62,400 per year with no weeks off. The reality is you will take a month off (if not all at once, accumulated over a year) which leaves the installer "netting" \$57,600 for the year. Taxes come out of that, any new test equipment or replacing the vehicle further diminishes the "net."

A careful examination of the *real* world of installing for Austar/Foxtel-Foxsat suggests with 3 completed installs per day, you are taking home the equivalent of \$26.67 per hour and working a nine hour ("away from home") day. The only way to earn more is to be faster, do more each day than 3, and stay away from service calls and collecting equipment from ex-subscribers (for which you are paid far less per hour of time than with a new installation).

\$26.67 per hour - not bad, certainly above welfare or dole rolls but you will never end up in the same club with Packer or Murdoch at that pay scale. Electricians, plumbers, other tradesmen do better.

Now comes the opportunity to sell completely new satellite installations into homes that qualify for the newly ABA approved "extended terrestrial service" from 7, 9 and 10 networks (plus ABC, SBS and others; see p. 1 here). Each new viewing home for this service will have to *purchase* a suitable IRD. At the moment that means a Panasonic TU-DS10, a UEC 642 or one of the newer, promised-to-be-available someday-soon UEC models. Unlike the Austar + installs, there is an opportunity here for the satellite installer to go into the marketplace and acquire from distributor sources every part of

MEMBERSHIP IN SPACE

Membership in SPACE Pacific is open to any individual or firm involved in the "satellite-direct" world in the Pacific and Asia regions. There are four levels of membership covering "Individuals," the "Installer/Dealer," the "Cable/SMATV Operator," and the "Importer/Distributor/Programmer."

All levels receive periodic programme and equipment access updates from SPACE, significant discounts on goods and services from many member firms, and major discounts while attending the annual SPRCS (industry trade show) March 24-27 in New Zealand. Members also participate in policy creation forums, have correspondence training courses available. To find out more, contact (fax) 64-9-406-1083 or use information request card, page 34, this issue of SatFACTS.

Page space within SatFACTS is donated each month to the trade association without cost by the publisher.

the new system. Which adds an element foreign to Austar + installers - *profit on the hardware*. The established pricing for a suitable IRD runs close to A\$1,000; the dealer "net" price closer to A\$750. After you have purchased the balance of the system (dish, mount, LNBF, cable etc.), the installer will have a net "cost" in the region of A\$900. We can anticipate commercial advertising that offers to consumers installed systems in the range of A\$1,495 upwards - a function of dish size, and location (truly remote sites requiring 800km of travel will obviously be more expensive).

Thus - where the Austar + installer is earning around A\$80 for each installation, the system seller for the new "extended terrestrial service" could net closer to \$500 per installation - because he has become a *reseller* of the hardware in addition to providing the installation labour.

Several things happen here. At \$80 a pop, installs are "*wham, bam, thank you m'am.*" At \$500 per system, the installer can afford to spend even a full day travelling and installing the system - he will "net" as much as he would installing 6(.25) Austar + systems - two days worth.

Of course there is a downside to this as well. As a dealer providing the hardware, when something breaks, *you* have to arrange a replacement (IRD, LNBF) - it won't show up automatically from Austar or Foxtel. *You* will also have to do your own customer finding - Austar won't be doing the marketing (finding and convincing customers). *You will*. In a sense, Austar does most of the thinking for you and asks you in robotic fashion to do the mechanical stuff of an install (the ideal Austar installer does precisely what he is told and only "thinks" when a wrench doesn't fit or an F-fitting is loose). With the new service offerings, *you* will be forced to put your own thinking cap on and work out the details of the new system.

"*Extended terrestrial service*" (ETS) will create new entrepreneurs - people who go into business not for the labour they can offer but for the *total service* of supplying from a collection of associated parts satellite television reception. The challenges will be extensive, the learning curve steep. That is why SPACE Pacific is establishing a new (www) web site to support dealers in this new area of enterprise.

spacepacific.co.nz is NOT active yet. The target date is April 1. Initially, this site will be open to anyone logging in. Shortly, portions will be limited to current members only and installer level (or higher) members will be given log in pass words granting them access to the inner bits and bytes (those passwords will be distributed around May 15).

spacepacific.co.nz will provide detailed guidance on assembling, marketing, and installing home dish systems. Our initial emphasis will be on the "extended terrestrial service" packages simply because that is the current challenge facing installers. The web site will include the latest field reports, information sources, and Aurora platform activity notes.

A synopsis of the current state of Aurora planning appears to the right. Note that as our RTIF analysis on p. 14 here reports, the Optus track record for making Aurora turn ons happen in a timely, predictable fashion has not been superb to date. Therefore, time schedules are best taken lightly for general planning purposes and not consumed as hard operational dates.

If you need further assistance in this exciting new area of satellite commerce, we suggest you contact (Email) SPACE activist and generally knowledgeable person Darrel Vecchio in Queensland (dvecchio@dalsat.com.au).

Recent RABS History

29/01/99: Imparja announces aggregation plans to merge eastern and central (television) zones. Imparja will become available in further areas of Queensland, NSW and Victoria; QQQ will expand into regions previously served only by Imparja. Imparja building new towers, terrestrial transmitters (Mt Isa, Longreach, Cloncurry, et al) while QQQ will do same inside of previous Imparja territory.

12/01/99: Imparja issues release announcing plans to expand service areas, suggests "within a year" existing QQQ sites in Queensland, NSW and Victoria will be expanded to included terrestrial transmissions from Imparja as well.

22/12/98: ABA release (NR126/ 1998) explains decision to allow aggregated service, notes "two commercial services (will now) be available in remote regions of Central and Eastern Australia. Parties (Shire Councils) may now apply for a license to do so, will no longer need to apply to the ABA for permission to retransmit either the IMP or QQQ service - merely need to complete (an) ABA12 application form to receive a licence to retransmit the service."

IRDs "Approved" by Optus for RABS Conversions

Divicom PV1200 (for rebroadcast sites)

NDS 3000 (rebroadcast, model being discontinued)

Panasonic TU-DS10 (domestic, not RTIF)

Tandberg TT1200 (for rebroadcast sites)

UEC 642 (domestic, RTIF qualified)

Conversion Planning

Before end of February - Central zone conversion from B-MAC to digital must be completed (B-MAC scheduled to turn off March 4)
Early March - NE digital conversion scheduled to begin (after Central - above - is completed)

26/2/99 to 6/5/99 - NE zone (QQQ, ABC, SBS)

12/3/99 to 20/5/99 - SE zone (ABC, SBS)

Useful RABS Contacts

ABA (reference rulings affecting extended terrestrial service)
www.aba.gov.au; 1-800 22 6667

ABC (reference conversion from B-MAC analogue to Aurora digital) 1-800 500 824

ABC (smart card turn-on, 5 time zones + radio) 1300 301 681
Dept. Comm & (the) Arts (reference federal RTIF and RABS policy) Colin Macdonald tel 02-6271-1140, or fax 02-6271-1078

Imparja (technical questions relating to Imparja's Aurora conversion) Tim Mason at tel 08-8950-1411, fax 08-8953-0322
Imparja Aurora hotline: Moogie or Donna 1-800 500 176

Imparja IRD authorisation: 1300 301 683

Imparja web page, www.imparja.com.au

Matsushita Electric (UK) Ltd (manufacturers of Panasonic TU-DS10); Malcolm Crahart, tel + +44-1222-542213, fax + +44-1222-734352

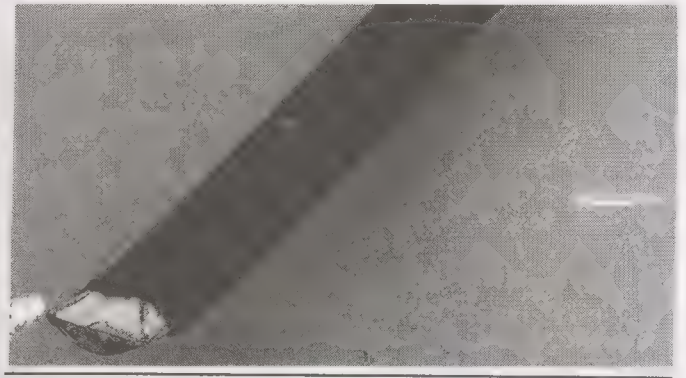
Practical hands-on Aurora assistance (Darrell Vecchio)
 Email dvecchio@dalsat.com.au

Nationwide Antenna Systems (web site dealing with UEC 642 distribution) www.uq.net.au/~zznation/index
RABS UEC-642 technical help line (Nationwide Antennas) 1300 301 086

SBS (smart card turn-on, four time zones) 1-800 500 727

TAL (QQQ) reference RABS planning; Raoul Prideaux tel 07 4721 3377

The CABLE Connection



Coaxial cable (any type, size) is round for an operational reason. Coax belongs to a family of "transmission" lines known as "unbalanced." That means that unlike the old style 300 ohm parallel flat or tubular line, the two "halves" of the transmission system are not equal.

A 300 ohm parallel line is "balanced" because equal *currents* flow through both sets of wires. For current to flow in any radio frequency circuit, there must be two totally separate "sides" to the electrical connection - the "go to" and the "come from."

In any transmission line there is a factor engineers call "impedance." At opposite ends of the electrical circuit which the transmission cable completes there are devices - an LNB(F) and a satellite receiver in our case, or, a television signal generation device (such as a modulator) and a television receiving device (such as a TV set). The "impedance" of the signal source device (the LNB or modulator) and the impedance of the receiving device at the opposite end of the transmission line (the satellite receiver or TV set) must be the same as one another and the transmission line must be the same as both.

Impedance is characterised by a number - 50 or 75 or 300 are common. Most coaxial cables are 50 or 75 - *ohms*. Now in *most* electrical circuits "ohms" is a unit of resistance - how much "opposition" there is to the flow of electricity through a circuit. A practical example:

- 1) You have a 19mm plastic water pipe
- 2) You connect it as a "transmission line" to a water tap that has a 13mm diameter and at the opposite end you connect the plastic pipe to a sprinkler with a 25mm connection.

The 13 - 19mm connection does not "fit" (match) and water coming from the 13mm (signal) source leaks out on the ground because the 19mm pipe is too big to create a proper junction. At the opposite end, the water that does not leak out at the "source end" sprays out at the "receiving end" (the sprinkler) because the 19mm plastic pipe does not fit properly into the 25mm fitting on the sprinkler. If one-half of the original

amount of water at the 13mm faucet ends up inside of the sprinkler, we might describe the system as "50% efficient."

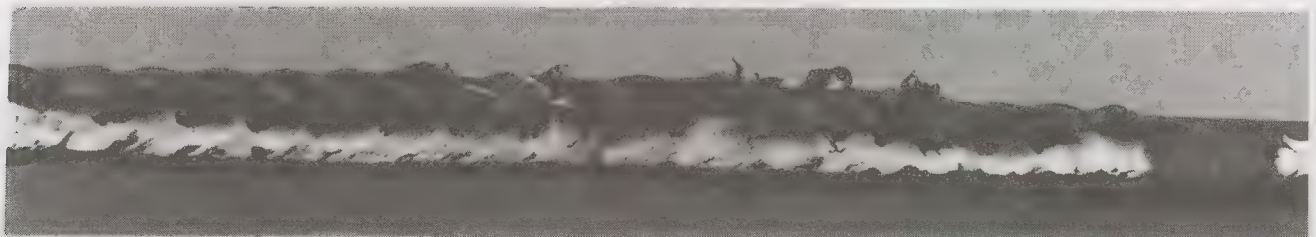
Unbalanced coaxial cable is like water pipe. If the impedance of the cable does not match the impedance of the source (LNB, modulator) and the impedance of the receiving end, some of the electrical current created at the sending end never arrives at the receiving end. This "missing" signal current is literally "lost" in the flow from source to receptor.

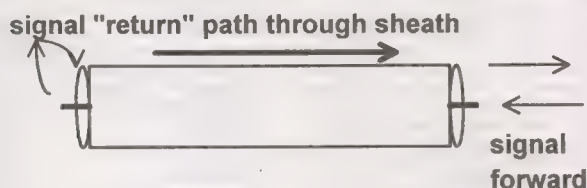
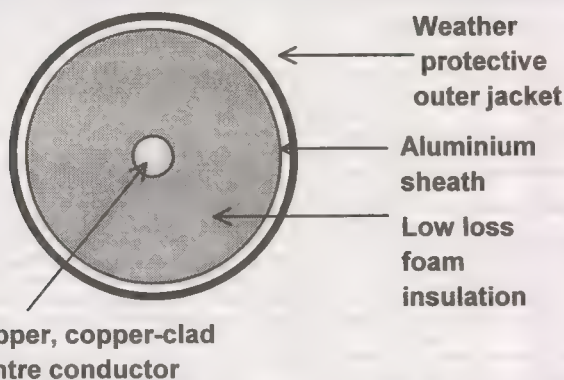
Coaxial cable carries the majority of the signal current on the inner (centre) conductor. However, if the outer conductor (the sheath) is damaged or broken, for all practical purposes the flow of electricity all but stops. The outer jacket, whether solid aluminium of hard-line cable or a "soft" mixture of aluminium foil and web-style weave (such as RG59, RG6, RG11), must be totally intact or the impedance of the line is destroyed. Think what would happen if you took a knife and cut into the 19mm plastic pipe while water was running through it and you have the basic concept.

Coaxial cable is round because that is the physical form required to create an "unbalanced" transmission line. If by some accident the cable is squashed, the impedance of the line changes dramatically at the point where the original diameter is distorted. A coaxial line is an "untuned" transmission circuit - it cares not what the frequency of the signal(s) might be - it simply carries them from one end to the other. However, it is possible (and in fact an old "trick" of ham radio operators) to purposefully "tune the line" by changing the "impedance" at two or more points. You can take an untuned line carrying signals between two points and "crush" it (distort the shape away from the original round) on purpose with the result being some portions of the original frequency range are "lost" (badly attenuated) because of the crushed points. We illustrate this to the right.

It is possible to crush cable and not lose all service on all frequencies carried. Cable is seldom crushed on purpose and if buried can be stubborn to locate. Which is one reason why coaxial cable is placed inside of conduit in vulnerable spots.

When a backhoe (mechanised digger) encountered this stretch of previously buried .540 aluminium coaxial cable, the teeth of the digger tattered the outer poly jacket and crushed the aluminium shell that forms 1/2 of the coaxial connection.



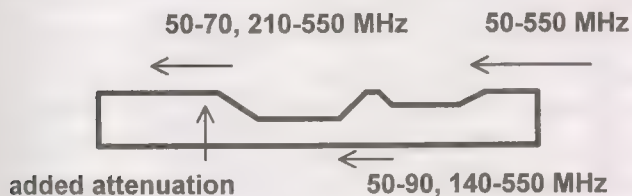


Although radio frequency signals "flow" from source (right hand side, above) to destination (left in above), the "counterpoise" or "return path" through sheath completes the circuit. If there is no sheath return, there is no signal flow (although there may be a small amount of signal radiation through the centre conductor).



NOT 75 ohm

When cable is crimped, dented, smashed - the primary cable characteristic (the impedance) is destroyed. This creates a "lump" in the cable's transmission path which becomes "frequency selective."

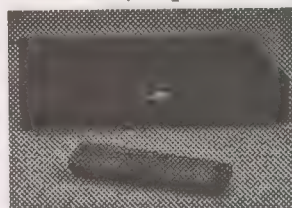


Input (right) covers 50-550 MHz (or any other frequency spectrum) which becomes disoriented at first cable compression causing a portion of the frequency spectrum (90-140 MHz in our example above) to be "dropped" to a lower level by attenuation. Second compression point interacts with first and stands alone as well, causing additional attenuation between 70 and 210 MHz. Net effect - original input bandwidth is turned into two thru-puts of 50-70 and 210-550 causing loss of signals in original 70-210 MHz region.

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SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 February 1999

BIRD	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
I703/57E	Sky News (BSkyB feed)	4187/963R 4140/1010R	1 1	3/4 3/4	5(.632) 5(.632)
	Occ. feeds	4055/1095L	1+	3/4	27(.500)
	CNBC	4018/1132L	1	3/4	6(.000)
	CNBC	3795/1355L	1	2/3	6(.000)
I704/66E	TV5. Adult 21	4055/1095R	4	3/4	27(.500)
	Sky News +	3805/1345R	4	3/4	22(.520)
	CNBC	3795/1355L	1	2/3	6(.000)
PAS4/68.5E	Nickelodeon +	4147/1003H	1 reported	1/2	24(.000)
	BBC	3743/1407H	5	3/4	21(.800)
	CCTV	3716/1434H	up to 6	3/4	19(.850)
Ap2/76E	HMark/Kermt	3720/1430H	4	3/4	19(.510)
	Baccarat	3836/1314H	1	3/4	3(.184)/6(.111)
	TVB-8 +	3849/1301H	4	3/4	13(.238)
	Disney	3880/1270H	3	5/6	28(.125)
	AXN	3920/1230H	up to 8	7/8	28(.340)
	Vietnam	12.696V	1	3/4	3(.516)
	ITC	3569/1581H	1	3/4	10(.200)
	MRTV	3666/1484H	1	2/3	4(.442)
	UTV	3920/1230H	6	3/4	26(.662)
	UTV/MCOT	3880/1270H	8	3/4	27(.500)
Them3/78.5E	Mahar./DD1	3600/1550H	up to 8	3/4	26(.662)
	Myanmar TV	3666/1484H	1	3/4	4(.442)
	TV Maldives	3460/1690V	1	3/4	6(.312)
	Thai Global +	3425/1725V	up to 7	2/3	27(.500)
	Chinese Tests	12.295.329H	1TV each	2/3, 1/2	6(.103/.930)
	(#1) Euro Bouquet	4000/1150H	6TV, 12r	3/4	28(.125)
	Hubei/HBTv	3854/1296H	1	3/4	4(.418)
	Hunan/SRTC	3847/1303H	1	3/4	4(.418)
	Guan./GDTV	3840/1310H	1	3/4	4(.418)
	Inn Mongolia	3828/1322H	2	3/4	4(.418)
As2/100.5E	APT N A-O	3799/1351H	1	3/4	5(.631)
	WTN Jer/Lon	3790/1360H	1	3/4	5(.631)
	WTN/Reuters	3775/1375H	1	3/4	5(.631)
	Reuters M-E	3770/1380H	1	3/4	5(.632)
	Liaoning/Svc2	3734/1416H	1	3/4	4(.418)
	Jiangxi/JXTV	3727/1423H	1	3/4	4(.418)
	Fujian/SETV	3720/1430H	1	3/4	4(.418)
	Qinghai TV	3713/1437H	1	3/4	4(.418)
	Henan/Main	3706/1444H	1	3/4	4(.418)
	Sky Racing	4020/1135V	3	1/2	18(.000)
As2/100.5E	EMTV	4006/1144V	1TV, 2radio	3/4	5(.632)
	KIBC	3940/1210V	1TV, 4 data	2/3	26(.655)
	STAR/ISkyB	3900/1250V	19TVw/3744	7/8	26(.845)
	BSkyB	3865/1285V	8+	7/8	26(.845)
	HeiLongJiang	3834/1316V	1	3/4	4(.418)
	JSTV	3827/1323V	1	3/4	4(.418)
	Shaanxi/QQQ	3813/1337V	1	3/4	4(.418)
	Guang GXTV	3806/1344V	1	3/4	4(.418)

Receivers and Errata
NDS encrypted
FTA (global beam)
Feeds-FTA SCPC
Asia-Europe feeds-FTA SCPC
FTA (Adult 21 Sat 15.30UTC)/east
Sky News 24 hr, sport, feeds FTA?
FTA SCPC
Testing; also try 26(.000)
FTA; 2 audio channels?
FTA
PowVu typ CA; Kermit temp FTA
FTA (may be off air?)
PowerVu CA
PowVu CA
Tests, promos, some FTA
FTA national service
FTA
FTA; difficult to load
Irdeto CA
Irdeto CA
FTA
FTA - may be only test
FTA (seen Australia)
FTA
FTA (mainland only beam)
FTA
FTA SCPC
FTA SCPC
FTA SCPC
FTA - #1 Chinese, #2 Mongolian
FTA SCPC
Mostly CA SCPC, some FTA
Some FTA SCPC
Some FTA SCPC
FTA SCPC
FTA SCPC
FTA SCPC
FTA SCPC
NDS DVS211 CA (ch.3. occ. FTA)
PowVu CA-very poor signal level
FTA 1 video ch; ZakNet data CA
NDS CA (Pace DVS211)
NDS CA (Pace DVS211)
FTA SCPC
FTA SCPC
FTA SCPC
FTA SCPC

BIRD	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(As2/100.5E)	Fashion TV	3796/1354V	1	3/4	2(.533)
	Eastern TV	3785/1365V	5	3/4	18(.000)
	Myawady TV	3766/1384V	1	7/8	5(.080)
	STAR/ISkyB	3744/1406V	35TVw/3900	7/8	26(.845)
	Star TV Sports	3700/1450V	5	3/4	27(.500)
Gz 25/103E	STS TV	3720/1430R	1	3/4	6(.500)
Cak1/107.1E	Indovision S- band	2.565 (.595) 2.625 (.655)	up to 8 per transponder	5/6	20(.000)
Sinoat 1/110E	TVB Jade	4106/1044V	1	2/3	4(.443)
C2M/113E	TV Indosiar	4073/1077V	1	3/4	6(.500)
	Mega TV	3780/1370V	5?	3/4	27(.500)
	C Net Taiwan	3760/1390H	10TV, 10 r	5/6	21(.091)
JcSat3/128E	NIC-J/GAOR	3985/1165V	1 or 2	1/2	6(.109)
API/138E	Reuters	3732/1418V	1	3/4	5(.632)
	Reuters	3742/1408V	1	3/4	5(.632)
	Taiwan Bqt	3800/1350H	up to 8	3/4	26(.697)
	MTV	3860/1290V	1	3/4	3(.000)
	Laos Nat. TV	3924/1226V	1	3/4	2(.522)
	CNNI	3980/1170V	2+	3/4	26(.000)
Optus B3/156	Aurora	12.595V	17+, 21+ rad.	3/4	30(.000)
	Aurora	12.407V	17+, 21+ rad.	2/3	30(.000)
	Austar/Foxtel	12.438(.564, .626, .688)	45+TV, 12 radio	3/4	29(.473)
Optus B1/160	Sky NZ	12.391(.418)V	18TV	3/4	22(.500)
	Imparja feed	12.367H	1	3/4	5(.424)
PAS-8/166E	NHK Joho	4065/1085H	5 TV, 1 radio	3/4	26(.470)
	Cal Bqt/PAS8	3940/1210H	7TV-?	7/8	26(.690)
PAS-2/ 169E	GWN Perth	12.265V	6TV, 7 radio	1/2	16(.200)
	Telstra Bend.	12.300V	2	1/2	21(.997)
	Yumin/Taiwn	12.325V	1+	3/4	8(.888)
	ABC Interchange	12.629, (.638, .646)V	1 TV each	3/4	6(.980)
	Mediasat	12.655V	1TV	1/2 & 3/4	6(.610)
	Maharishi	12.664.5V	1TV	1/2	3(.300)
(#2)	HK PowVu	4148/1002V	up to 8	2/3	24(.430)
(#3)	NBC HK	4093/1057V	5 typical	3/4	29(.473)
	JET Singapore	3962/1188V	2	1/2	13(.740)
	Feeds	3942/1208V	1 or 2	2/3	7(.497)
	ESPN USA	3860/1290V	7TV, 2 data	7/8	26(.470)
(#4)	Middle East	3778/1372V	4	3/4	13(.331)
	Service 1	3761/1389V	1	3/4	6(.620)
	BBC + TFC	3743/1407V	5	3/4	21(.800)
(#5)	CCTVPowVu	3716/1434V	4 typical	3/4	19(.850)
	Feeds	4189/961H	1 or 2	7/8	6(.600)
	TCS-Singap.	4183/967H	2	1/2	6(.620)
	Feeds	4138/1012H	1	3/4	6(.620)
(#7)	NHK Joho	4035/1115H	5TV, 1 radio	3/4	26(.470)
	CNNI HK	3996/1154H	1TV	3/4	9(.998)
	Feeds	3967/1183H	1+	2/3	6(.618)
	PAS-2 feeds	3939/1211H	2 (NTSC)	2/3	6(.620/7.498)
(#8)	Cal PowVu	3901/1249H	up to 8	3/4	30(.800)

Receivers & Errata
Temp FTA- see notes p. 6 Jan.
PowVu CA -#5 FTA; off-air?
FTA SCPC - difficult
NDS CA (Pace DVS211)
NDS CA (Pace DVS211)
Pgming +7hrs Moscow
RCA/Thomsom IRD Highly erratic, see p. 29 Jan. (Horizontal)
FTA SCPC-difficult to load
FTA SCPC, maynot be permanent
unknown encryption format
2 TV chs FTA. rest CA
Poss PowVu. test
FTA SCPC
FTA SCPC
FTA MCPC
FTA SCPC
FTA SCPC
CNN FTA
CA, \$50 smart card required
CA, \$50 smart card required
DGT400 CA except #29 (TVSN)
NDS CA, 12.391 primary
may be temp feed to Aurora
ICA (D9234).. 4 FTA
mixed CA + FTA (EWTN)
PowVu CA (D9234)
PowVu typ. CA (D9223 only)
reported FTA-China beam
format PowVu, nominally FTA: except 0000-0400UTC wkdays
FTA, occasional service. feeds
FTA, strong to NZ
PowVu, mostly CA, some FTA
Philips mux format FTA
PowVu CA
FTA occ. feeds
PowVu CA; avoid #8.9 w/9223!
FTA -hard to load
occ feeds, FTA SCPC
PowVu; CA and FTA (BBC#3)
FTA (# pgm chs varies)
Test cards, may be feeds
PowVu FTA MCPC
FTA SCPC
1 CA (D9234), 4 FTA to 30/04/99
FTA - occasional feeds
FTA - occasional feeds
FTA (NBA , shuttle-typ NTSC)
Some CA, some FTA (NTSC)

PAS-2/169E	Disney	3804/1346H	3	5/6	21(.093)
	Discovery Sing	3776/1374H	8	3/4	21(.093)
	Satcom 1-6	3743/1407H	6	7/8	19(.465)
I702/177E	AFRTS	4177/973L	8TV, 12r.+	3/4	26(.694)
	Thai Bouquet	12.650H	up to 3 TV	1/2	17(.800)
I701/180E	TVNZ Gennet	4195/955R	1 (CA)	3/4	5(.632)
		4186/964R	BBC/Gennet	3/4	5(.632)
		4178/972R	1 (CA)	3/4	5(.632)
		4170/980R	APT-N-Tokyo	3/4	5(.632)
		4120/1030R	1	3/4	5(.632)
(#9)	RFO-Canal+	4095/1055L	7TV, 5+ radio	3/4	27(.500)
	SPN Nauru	4081/1069R	1	3/4	4(.730)
	Baccarat	4028/1122R	1	5/6	3(.702)
	NZ Prime TV	4024/1126L	1	2/3	6(.876)
	Network 7	3966/1184L	1	7/8	6(.446)
	RFO direct	3858/1292L	1	3/4	4(.566)
	TVNZ TL	3854/1293R	1	3/4	5(.632)
	TVNZ	3856/1294R	1	3/4	5(.632)
	TVNZ	3846/1304	1	3/4	5(.632)
	10 Australia	3765/1385R	6	7/8	29(.900)

PowVu (D9234) CA
PowVu (D9234) CA
PowVu(D9234) CA
PowVu (D9234) CA
FTA, replaced Space TV
DMV/NTL CA, all channels occ. use, FTA irregular around special event coverage
<was MTV Europe)
Canal + (2) CA, rest FTA
FTA SCPC; weak signal
FTA SCPC; NTSC, short hrs
PowVu CA; network feeds
SCPC FTA NTSC f/USA
East hemi beam to Tahiti
SCPC mixed FTA. CA feeds
SCPC mixed FTA. CA feeds
SCPC mixed FTA. CA feeds
PowVu CA: #5,6 occ FTA

Bouquets: MCPC (multiple [program] channels per carrier) MPEG-2 content frequently changes. Primary FTA (free to air) MCPC bouquets are as follows: 1) European Bouquet: (1) Deutsche Welle, (2) MCM, (3) RAI International, (4) RTVE (Spain), (5) TV5 Paris + up to 13 radio (some stereo); 2) Hong Kong PowVu: (5) Ad Hoc NTSC feeds, (6) Ad Hoc PAL feeds; (3) NBC HK (Hong Kong): (1) CNBC regional, (2) CNBC Australia, (3) National Geographic regional [English], (4) CNBC India, (5) National Geographic [subtitled Taiwan]; (4) Middle East [testing]; (1) Antenne 1, (2) Lebanon LBC, (3) ART Australia, (4) RAI Australia; (5) CCTV PowVu: (1) CCTV4, (2) CCTV3, (3) CCTV 9, (4) test bar; (7) NHK JoHo: (1) NTSC Japanese, (2) NTSC English, (3) PAL Japanese, (4) PAL English, (5) NHK Radio, (6) NHK Premium; (8) Cal PowVu: (1) CMT [NTSC], (2) Ad-hoc [NTSC], (3) ART, (4) EWTN + Global Catholic Radio [to 24/03/99], (5) Ad hoc feeds, (6) Bloomberg Financial [NTSC], (7) Golf Channel [NTSC], (8) Discovery; (9) RFO-Canal+: (1) Canal+ [Polynesia], (2) Canal+ [New Caledonia], (3) FTV (NA), (4) MCM, (7) TOM1, (10) TOM2, (13) TOM3 + radio on 5,6,8,9,11,12,14,15.

MPEG-2 DVB Receivers: (Data believed accurate; we assume no responsibility for correctness!)

AV-COMM R3100. FTA, excellent sensitivity (reviewed SF May 1998). Av-Comm Pty Ltd., tel 61-2-9949-7417

Grundig DTR1100. Mfg by Panasat S. Africa, similar to Panasat 630; out of production, Irdeto capable (see AV-Comm, above)

Hyundai-TV/Com. HSS-100B/G (Pacific) and HSS-100C (China) FTA. Versions 2.25/2.26 good performers, 3.11 currently offered and those with Nokia tuners good performers. Version 5.0 not so good. SATECH ([V2.26] 61-3-9553-3399), Skandia ([V3.11] 61-3-9819-2466). Skyvision Australia ([V3.11, Nokia] 61-2-6292-5850).

Hyundai HSS700. FTA, PowerVu, search, SCPC/MCPC. (Kristal Electronics 61-7-4788-8906) [New February 1999]

MediaStar D7. FTA, preloaded with known services, exc. software (review SF July 1998). MediaStar Comm. Int. (61-2-9618-5777)

Nokia "d-box" (V1.7X). European, FTA, typically German menu, capable of "Dr. Overflow" Internet updates. Caution on this one!

Nokia 2000S (Asia/Pacific). Released Oct. 1998; equipped with CAM/PCMCIA slot, capable of Irdeto, others (factory will NOT supply CAMs at this time); no Asia-Pacific sources known at this time (but readily available through European sources); review 11/98.

Nokia 9200/9500/9600/9800. FTA, factory software does PowVu poorly, but has significant Internet software support. Ultimate play-around hobby machine but not consumer friendly. Original V1.63 had unique ability to search entire satellite to locate and list all SCPC/MCPC services: latest (V5.X software) versions compatible with Dr. Overflow (V8.X) software from Internet. CI (common interface) versions available in Europe, do not presently allow Irdeto however. No Pacific/Asia support; help from Av-Comm (61-2-9949-7417), and software from www.BAKKERELECTRONICS.COM.

PACE DVS-211. NDS CA only (no FTA); Sky Racing (As2), Indovision, others. (Sky Racing - Bob Pankhurst 61-2-9451-0888)

PACE DGT400. Original Galaxy (now Foxtel Sat/Austar) IRD, Irdeto, FTA with difficulty. (Foxtel Australia 1300-360818).

PACE DVR500. Original NBC affiliate IRD; FTA or Irdeto (w/CAM). Similar to DGT400, more reliable. No sources.

PACE "World Box." (DSR-620) Created for NDS non-DVB compliant MPEG-2, including Sky NZ. Info, ++49-211-526-9833.

Panasat 520/630/635. MCPC FTA, Irdeto capable. Out of production; spares from UEC (fax ++27-31-593-370, Russell Futter).

Panasonic TU-DS10. FTA, Irdeto CA. (see SF Aug. 1998). Aurora, (Antares 61-7-3205-7574; Evcom 61-2-9316-5055),

Phoenix 222. FTA, PowVu. Exceptional graphics, ease of use. (SATECH 61-3-9553-3399)

Phoenix 333. FTA MPEG-2, analogue, positioner. Detailed review SF Nov. 1998. (SATECH 61-3-9553-3399).

PowerCom. FTA, PowVu, exc. sensitivity. (NetSat 61-2-9687-9903)

PowerVu /PowVu D9223, 9225, 9234). Non DVB compliant proprietary format capable MPEG-2 FTA with optional software. 9234 sold for GWN and NHK Joho PAS-2, EMTV As2, CA access; others for various CA services. (Scientific Atlanta 61-2-9452-3388)

Praxis DigiMaster 9600 MKII/9800AD. FTA, PowVu + analogue.; (Skyvision Australia 61-2-6292-5850; Telsat 64-6-356-2749)

Praxis 9800 ADP. FTA, PowVu, analogue, positioner. Review December 1998. (Skyvision Australia 61-2-6292-5850)

Prosat 2102S. FTA, NTSC + PAL, SCART + RCA. (Sciteq 61-8-9306-3737)

SatCruiser DSR-101. FTA, PowVu, NTSC + PAL. (Skyvision Australia 61-2-6292-5850; Telsat 64-6-356-2749)

SK888. (aka DigiSkan from Sun Moon Star). FTA MCPC, Irdeto CAM capable. (Skandia 61-3-9819-2466)

UEC 642. FTA, Irdeto built-in, for Aurora + Optus DTH. ("Mondec" rack mount industrial version) (Nationwide 61-7-3252-2947)

UEC 660. Designed to Australian pay-TV specs/smart card + mondec card slots (Nationwide 61-7-3252-2947)

YURI HSS-100C. FTA, rebadged Hyundai V.2.27 software custom to Australia (Nationwide 61-7-3252-2947)

SatFACTS Pacific/Asian FTA ANALOGUE Watch: 15 Feb. 1999

Copyright 1999: SatFACTS, PO Box 330, Mangonui, Far North, New Zealand (FAX 64-9-406-1083)

BIRD / Location	RF/IF & Polarity	Service	Errata
2DT/55E	3820/1330L	DD1	
1703/57E	3755/1395R	Sun Music	
	3798/1352R	RTNC	
	3980/1170R	AsiaNet	
	4055/1095R	WorldNet	VOA subcar.
	4125/1025R	TVi	
	4175/975L	Muslim	
1704/66E	3765/1385R	Tests	
	4015/1135L	Mongolia	(Secam)
PAS4/68.5E	3743/1407V	RTPi	
	3840/1310V	Home Ch.	(may be off)
	3785/1365H	CNBC	
	3864/1286V	BBC World	
	3910/1240H	Sony TV	Hindi
	3907/1243V	Maharishi	
	4034/1116V	Doordan	
	4085/1065H	CNNI	
	4110/1040H	TNT/Cartoon	
	4113/1037V	Series Ch.	
	4185/965H	MTV	
PAS7/68.5E	3470/1680V	Test Signal	
Ap2R/76E	3760/1390H	AXN card	
Thaic3/78E	4155/995V	DD12 Pal	Asian beam?
	3871/1279H	TVT	
	3760/1390V	Army TV	
	3690/1460V	MRTV	
	3685/1465H	Mynamar	
	3635/1515V	RAJ-TV	Tamil
	3616/1534V	ATN	
	3576/1574V	ATN Bangla	Bengali
	3536/1614V	Punjabi TV	Punjabi
Exp. 6/80E	3672/1478L	TK Rossija	(north only)
	3875/1275L	VTV4+	(north only)
	3925/1225L	ACT/TB3	(north only)
	4125/1025L	Russia 3	(north only)
	4025/1125L	Prometei AST	(north only)
ChiStr1/87.5	3880/1270H	CCTV1, 2	P4 NSW Ntsc
CIS S6/90E	3675/1475R	RTR1	
	3875/1275R	Orbita I	
	3916/1234R	RTR II	
	3935/1215R	Orbita II	

MeSat-1/91.5E	3710/1440H	VTV 1,2, 4	
	3880/1270H	RTM-1	
Insat2B/93.5E	4163/987H	India Metro	Aust on 3.7m
	4128/1022V	Ind. National	Aust on 3.7m
	4070/1080H	India DD9	
	4080/1070V	DD7 (Tamil)	
	3970/1180V	DD9 (kan.)	
	3882/1268V	India DD1	
	3840/1310V	India DD	
	3762/1388V	India DD4	
CIS-S20/96.5E	3675/1475R	ORT	
	3825/1325R	Madagascar +	
	3875/1275R	Test Card	
AsSat2/100.5E	3642/1508H	ERTU Egypt	
	3660/1490V	Test Card	
	3680/1470H	Feeds/Iran	
	3860/1290V	Feeds #	
	3885/1265H	WorldNet	VOA Subcar.
	3960/1190H	CCTV4	
	3980/1170V	RTPi	Radio Subcar
CIS S21/103E	3675/1475R	RTR	
	3875/1275R	Vrk.Apt	
PalB2R/108E	4000/1150H	TVRI	
PalC2/113E	4183/967V	TPI/TVRI	
	4160/990H	(France) TV5	
	4140/1010V	Brunei, feeds	
	4120/1030H	MTV Asia	
	4080/1070H	Herbalife	2100HK/NTSC
	4040/1110H	CNBC	
	4020/1130V	ANteve	(left air?)
	3970/1180V	CNNI	(was 3980)
	3960/190H	SCTV	(reported off)
	3900/1250V	Malaysia TV3	
	3880/1270H	Aust. ATN7	
	3765/1385H	NBC, CNBC	Feeds, Herbalif
	3742/1408V	RCTI	English subcar
	3720/1430H	MCM Asia	test only?
AsSat-G/122E	3675/1475L	Moscow 6	Very powerful
G'zont29/130E	3675/1475	test sig	+3775,3875
Ap1A/134E	3820/1330H	CETV SD	

UPCOMING SATELLITE LAUNCHES

JcSat 6 to 154E - Feb 14 rescheduled (Ku)
 Yamil 1 to 75E - "After Feb". HP Ku + C
 AsiaSat 3S to 105.5E - Now March ?? (C + Ku)
 Orion 3 to 139E - 25-27 March (C+Ku)
 Chinasat 8 115.5E- Now "late March". Ku + C
 Insat 3A to 74E - now scheduled "March". C + Ku
 Insat 2E to 83E - "early April". 17 C
 NSS K-TV to 95E - "late" April (HP Ku)
 Telkom 1 to 108E - "late May". replace B2R
 Asiastar (1452-1492 L-band) to 105 E- 'July'
 LMI 1 to 75E - August HP Ku
 Express A3 to 80E - September. C + Ku

February Alert

PAS8 will "light up" over current 30 days, watch Ku band for signs of Australian beam signals and C-band vertical for new services. At 130E, watch for Gorizont (ex-161E) on 3675, 3775 and 3875. New channel loading for Foxtel/Austar underway - many changes. Adventuresome? Try 144W (that is west) C-band linear, 4.160H and others for BrazilSat A1.

53.2	55	57	66	68.8	76	78.5	80	87.5	88	93.5	93.5	96.5	100.4	103	105.5	107.1	108	110.5	113	120
S27	2DT	1703	1704	PAS4 PAS7	Ap2	Th3	Ex2	Cs1	St1	Me-1	In2B	S20?	As2	S21	As1 (As3)	Ct1	B2R	Ss1	C2	Th1/ 2
C	C	C	C	C	C	C	C	C,Ku	C	C,Ku	C	C	C,Ku	C	C	"S"	C	C,Ku	C,Ku	C

122	128	134	138	(139)	140	145	146	148	151	152	156	160	161?	166.5	169	174	177	180	177	177
As-G	Jc3	Ap1a	Ap1	Or3	S7	S16	Ag2	Me2	C1	A3	B3	B1	Mb1	PAS8	PAS2	I801	I702	I701	IF3	Es4
C	C,Ku	C	C	C,Ku	C	C	C,Ku	C,Ku	C	Ku	Ku	Ku	C	C,Ku	C,Ku	C	C,Ku	C	C,Ku	Ku

Ap1A/134E	3900/1250V	CETV2	
	3980/1170V	CETV1	
Ap1/138E	4160/990H	CCTV7	
S7/140E	3675/1475R	Test Card	mod. inclined
S16/145E	3675/1475R	Test Card	high inclined
	3875/1275R	Feeds, tests	high inclined
Ag2/146E	3787/1363H	GMA	poor s. eqtor
Me2/148E	4080/1070H	test card	occ. use
C1/150E	4160/990H	TPI	occ. use
PAS8/166.5	3860/1290H	PAS Napa	test card
	4020/1130H	PAS Napa	test card
PAS2/169E	4000/1150V	CNNI	1/2 Tr format
	3780/1370V	Feeds-Napa	
I802/174E	4166/984R	Feeds	
	4177/973R	Feeds	
I702/177E	4166/984R	Feeds	KBS Korea
	4187/963R	Feeds	Feeds
I701/180E	3810/1340R	Feeds	
	3841/1309L	RFO	East beam
	3845/1305R	Feeds	inc. USA
	3930/1220R	USA Feeds	Typ. encrypt.
	3975/1175R	Feeds	
	4060/1090L	Feeds	
	4130/1020L	Feeds	

Oddball Formats

PAS-4/68.8	3785/1365V	Discov. India	rptd BMAC
PAS-4/68.8	3860/1290H	ESPN Indian	rptd. BMAC
Ap2/76E	3960/1190H	HBO Asia	GI Digiciph2
C2/113E	3930/1220H	Fil Peo. Net	GI 1.5 MPEG
PAS2/169E	3836/1314H	ABS/CBN	GI 1.5 MPEG
PAS2/169E	3989/1161V	Fox/Prime	Sal.5MPEG

Optus B3 at 156E / Ku only

12.688/1388H	Austar MPEG	Irdeto CA IRD	list below
12.658/1358V	ABC west	BMAC RABS	until 15-02-99?
12.626/1326H	Austar MPEG	Irdeto CA IRD	list below
12.595/1295V	Aurora MPEG	Irdeto CA IRD	RABS. card req
12.564/1263H	Austar MPEG	Irdeto CA IRD	list below
12.533/1233V	Net 9, Sky	typ. B-MAC	interchange
12.530/1230V	Herbalife	10-1200 UTC	NZ. beam
12.438/1138H	Austar MPEG	Irdeto CA IRD	list below
12.407/1107V	Aurora MPEG	Irdeto CA IRD	RABS. card req.
12.340/1040H	Imparja	BMAC RABS	until 06/99?

Optus B1 at 160E / Ku only

12.730/1430H	RHEF, NZ feeds	typ FTA anal.	occ use
12.677/1377H	QSTV	BMAC RABS	until 06/99?
12.670/1379V	SE ABC	BMAC RABS	until 06/99?
12.644/1344V	SE ABC	BMAC RABS	until 06/99?
12.639/1339H	NE SBS	BMAC RABS	until 06/99?
12.613/1313H	NE ABC	BMAC RABS	until 06/99?
12.596/1296V	Sky Racing	BMAC	
12.576/1276H	ABC Radio	digital	
12.570/1270V	OmniCast		FM/FM
12.547/1247H	ABC feeds	typ analogue	occ use
12.520/1220H	Net 9 feeds	typ. BMAC	
12.518/1218V	Sky NZ	NDS MPEG	Pace DSR-620
12.482/1182V	Net 10 feeds	typ. E-PAL	
12.480/1180H	Net 9 feeds	typ E-PAL	
12.455/1155V	Net 10 feeds	typ. analogue	
12.451/1145H	Occ feeds		
12.448/1148H	Herbalife	10-12UTC	now off? see B3
12.391/1091V	Sky NZ	NDS MPEG	Pace DSR-620
12.376/1076H	Aurora tests	MPEG-2	CA. inactive?

Revised Foxtel/Austar/Optus Satellite Channel Line-up (February 05, 1999)

12.438/TR11 Hz: (35) BBC, (36) Weather 21, (37) Fox Movies, (38) UKTV, (39) Hallmark, (40) Fx, (41) Fox Kids, (42) NIU, (43) NIU, (44) NIU, (45) NIU.

12.563/TR13 Hz: (13) Main Event, (14) CMT, (15) Sky Racing, (16) Disney[00], (17) Movie 1, (18) Movie Extra, (19) Movie Greats, (20) 7 Sports 1[00], (21) 7 Sports 2[00], (22) Odyssey[00], (23) MTV[00], (24) Sky News Australia + Radio 1, Radio 2, Radio 3, Radio 4

12.626/TR14 Hz: (25) TNT + Cartoons, (26) Weather 21, (27) CNBC, (28) World Movies, (29) TVSN/FTA, (30) CNNI, (31) ESPN[00], (32) Ovation[00], (33) RAI [00][Italian], (34) Antenne[00][Greek] + Radio 5 through Radio 12

12.688/TR15 Hz: (1) TV1, (2) Showtime, (3) Encore, (4) Fox Sports 1, (5) Arena, (6) [V], (7) Nickelodeon, (8) Discovery, (9) Fox Sports 2, (10) Lifestyle, (11) Comedy Channel, (12) National Geographic

(Notations: Channel number [i.e., (35)] means sequential number as they load on IRD. NIU is not in [current] use. 00 means service is only available with an Optus Vision smart card which at this time is not commercially available.)

WITH THE OBSERVERS

AT PRESS DEADLINE

"A whiff of PAS8 Ku signal" has been identified at Napa by PanAmSat after latest rotation of bird on axis. At present "twist," PAS8 is expected to be down 3-4 dB on Ku Asian beam and may only be used on single polarisation. Official position - "C-band not affected by satellite rotation, Vt side is 'OK' although testing there sparse." Commercial users now to begin operation February 14.

Reports (or more specifically, a lack of ...) on PAS-8 transmissions highlight this month's observations. As we try to update on p. 6 here, PanAmSat is attempting to correct for either a design, construction or launch error to make PAS-8 do what it was originally intended to do. This has stretched out the "test" period which under normal circumstances should have been completed by 1 January.

Eric Fien (NSW) and others report they have been able to "measure" the ground effects of a satellite being twisted on its axis (corkscrew style). Fien calculates the normal dead-off-vertical twist of the PAS-8 signal at his location should be 7 degrees. But as the satellite has been controller twisted on its axis without compensation to the polarisation of downlink signals, he has measured as much as 17 degrees "twist" in the incoming signals. At SatFACTS, we set up a hybrid mode linear V and linear H feed in mid-January and



S-band Indovision service as received on Fiji. Note Indovision 1 (top photo) has signal quality of 80% while Indovision 2 (bottom photo) is 45%. At time of tests, Indovision 1 was loading 2.626 GHz transponder. Mosaic display (centre at right) shows operating channels at time of reception tests.

(Photos courtesy KP, Fiji)

very carefully set the cross pole nulling at that time. By early February, we were measuring horizontal signals out of the vertical port which told us either the satellite has twisted in position, or our feed has mysteriously rotated on its axis.

Data supplied by PanAmSat to cable operators and others late in January clarifies their plans to "compensate" present users of PAS-2 who would be forced to install a second dish because some of the PAS-2 programmers will be moving to PAS-8. PanAmSat is recommending a technically interesting multi-feed system that allows you to use one parabolic reflector for two (or more) closely spaced satellites. SatFACTS covered this in some depth in our March (1998) issue, p. 20.

Because a dish pointed at one satellite focuses the received energy at the focal point centre of the dish, a satellite to either side of the boresight bird will also create its own focus point

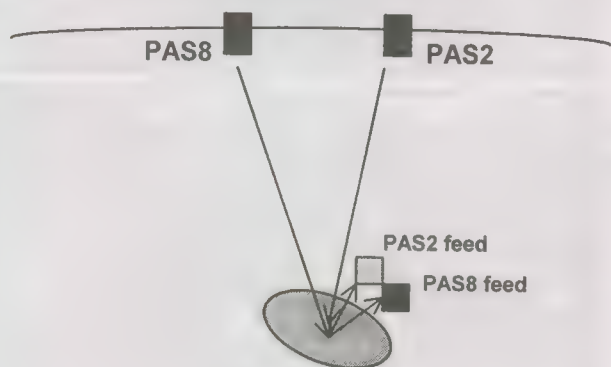
WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for March 15th issue: March 5 by mail (use form appearing page 34), or 5PM NZST March 6th if by fax to 64-9-406-1083.

FoxSat Moves into Low Gear

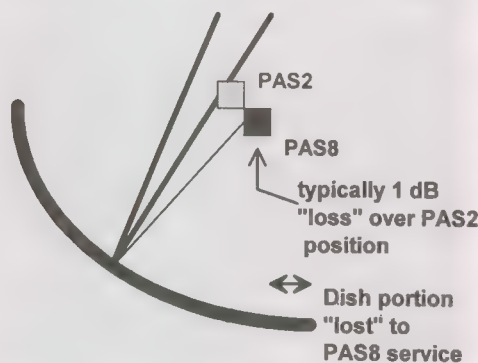
Launch day is officially March 1 although areas around Newcastle (NSW) have been early-launched as Foxtel assumed control of the MMDS subscribers from Eastern (converting them to satellite). FoxSat customers will have access to 21 (Basic) channels for A\$54.95 (\$42.95) per month, 26 (Basic + Entertainment Plus) channels for \$64.90 (\$52.90) monthly, or 27 (Basic + Entertainment + World Movies) channels for \$67.95 (\$56.85). The numbers in (parenthesis) is the price for the same channels delivered by Foxtel cable. Foxtel cable subscribers may switch to satellite for \$99.95 while satellite subscribers can switch to cable (where cable is available) for a one time charge of \$29.95. There will be a charge of \$30 for lost smart cards, remote control units - a "lost" IRD will cost \$500. A second decoder is \$29.95 per month. In preparation for launch of additional Foxtel channels to FoxSat, Optus has fired up transponder 13 (Hz) on 12.564. This makes a total of four pay-TV transponders (11/12.438, 13/12.564, 14/12.626 and 15/12.688) in service. Optus still has "in reserve" identical (in performance) transponders 9 (12.313), 10 (12.376) and 12 (12.501) - although each has "other" (non-pay-TV digital) users at this time.

Basic FoxSat package: TV1, Showtime, Encore, Nickelodeon, Discovery, Fox 8, Fox Sports 1, Fox Sports 2, National Geographic, Channel [V], Arena, Sky News Australia, BBC World, CNNI, Lifestyle, TNT/Cartoon Network, Sky Racing, CMT, CNBC, TVSN, UKTV.

Entertainment Plus additional channels: Fox Kids Network, FX + FX Movies, Hallmark Entertainment, The Comedy Channel, The History Channel. Also seen testing: Greek Antenne TV and RAI International.



For locations south of the equator (above - north, reverse relative locations of PAS-2 and PAS-8). Below - relative performance of multi-feed system.



centre in a different location. By installing two separate feeds, one for each bird, and adjusting each feed for optimum signal, one dish in theory will access two satellites. With PAS-2 at 169 and PAS-8 at (nominally) 166, this means one of the two birds will with a multi-feed system be 1 dB weaker than it would have been if the dish was boresighted on it.

For fixed applications (cable TV, SMATV, NHK service) this saves ground space (one dish rather than two) and some expense. PanAmSat has contracted with a firm called Superior Satellite Engineers (1743 Middle Road, Columbia Falls, Montana 59912, USA; tel ++1-406-257-9590, fax ++1-406-257-9599) to create the multi-feed hardware for users of PAS-2 who will also be using PAS-8. Where dishes will be replaced, PanAmSat has contracted with Satellite Export and Engineering, Inc. (1007 Industrial Avenue, Albion, Michigan 49224, USA; tel ++1-517-629-5990, fax ++1-517-629-6690) to provide new (Patriot brand) parabolic surfaces and mounts. A 10 page chart created by PanAmSat lists 456 "sites" where PAS-2 presently has identified customers using PAS-2 and spells out the dish size required for PAS-8. The smallest dish advised is 3.1m (because of adjacent bird beamwidth limitations - see p. 6 here) and all of Australia falls into the 3.1 camp, as does New Caledonia. All of New Zealand falls into the 3.8m group. The problem with all of this advance work is - based upon reports to SatFACTS to date, nobody seems to be receiving and measuring signal levels which support the dish sizes PanAmSat is recommending. If levels are truly below those PanAmSat is forecasting, the multi-feed "fix" that allows both birds to be received with a common reflector becomes even more risky.

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ApStar 2R/76E: C Net Taiwan (3695/1455V) has shut down tests, apparently will not use this satellite (see Palapa C2). Hallmark and Kermit (3720/1430H) adding dual language (Chinese + English) audio channels; Kermit continues FTA.

AsiaSat 2/100.5E: "Watched Tyson/Botha title fight FTA on Myawady TV 17/1 including all other bouts, English audio from Showtime USA - Austar wanted A\$50 for this one!" (P. Cook, Yappoon, Qld.) US Information Agency (WorldNet) is expanding beyond present 36 MHz transponder to allow carriage of 24 VOA radio channels; no details of frequency.

Cakrawarta 1/107.5E: Seems to have settled down with 4 operating transponders (S-band).

Gorizont at 130E: New satellite (#29?) moved to this location late January, testing 3675/1475, 3775/1375, 3875/1275. *Watch this one!*

Intelsat 701/180E. Occasional video feeds, FM radio station KLOS (Los Angeles) have disappeared from 3720/1430R. Saudi TV and Abu Dhabi have been replaced (4095/1055L) with Fashion TV and MCM. FTV is North American version, significantly different from As2 (L. Loxhay, NZ).

Intelsat 702/177E: Kuwait Space Channel (12.650Hz) has shut down, replaced by test card. 4170/980R, KBS - Korea feeds.

Intelsat 802/174E: 4166/984R CTS feeds for and from Taiwan (D. Leach, NSW).

Intelsat 704 at 66E: FTA Adult 21 has begun digital tests on 4055/1095R Saturdays 15.30-16.30UTC (Sr27.500, 3/4).

JcSat3/128E: Test cards 3980/1170H, 1070V have stopped.

Palapa C2/113E: C Net Taiwan Sun bouquet 3760/1390H in and out of CA mode late January, early February; mostly CA

(except for 2 educational channels occasionally FTA) at presstime. RCTI testing on 3440H has now stopped. TV Indosiar has switched to MPEG-2 FTA on 4073/1077V (Sr 6.500, FEC 3/4). MCM Asia back on 3720/1430H analogue.

Optus B3/156E: "Does this set a new mark for smallest dish that works - even if only barely?" 1.2m Paraclipse, loads on 12.626Hz at Te Anau, SW New Zealand (Robert Skilton). With 12.564, Austar/Foxtel transponders rearranged (p. 28)..

PAS2/169E: NBC bouquet 4093/1057V has reconfigured, may require you reload as FTA service. Revised channel line-up: 1/CNBC regional, 2/CNBC Australia (for hotels), 3/ National Geographic Regional, 4/CNBC India (for hotels), 5/ National Geographic Taiwan (Mandarin dubbed). Occasional video feeds 3942/1208V Sr 7.497, FEC 2/3. "Phoenix 333 gives me FTA audio on ESPN CA channels 3860/1290V" (P. Cook). Occasional video 32967/1183H (SCPC Sr 6.618, FEC 2/3 - S. McLeod, NZ).

PAS8/166E: Test cards on 3860/1290Hz, 4020/1130Hz, digital on 4167/983 (6.XXX, no lock) and 3940/1210. EWTN notifying users it will move to 3940/1210Hz, Sr 26.690 and FEC 7/8 (NTSC) with feeds parallel to PAS-2 starting February 15th, close down of PAS-2 March 24. NHK due to recommence feeds parallel to PAS-2 on 4065/1085Hz (Sr26.470, FEC 3/4), still plans late April shut down of PAS-2. Beacon appears to be at 3700/1450.

(CIS)S-20/96.5E: "Zero degree look angle, at my horizon, P5 on 3675, P3 on (Madagascar) 3825" (B. Ward, NZ)

Thaicom 3/78.5E: DDI (India) reported 3600/1500H in MPEG. DD12 reported 4155/995V Asian beam, PAL. TV Maldives can be seen in NSW (3460/1690V; D. Leach)



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AT

Sign-off

Getting it there - safely

There are few things in life more frustrating than opening an anticipated shipment and discovering the contents are smashed or inoperable. Satellite IRDs are especially vulnerable to shipping damage because parts "float" on sizeable, often not carefully supported, PC boards that flex badly when the box is dropped or tossed by a careless in-transit person. When a circuit board flexes, those microscopic connecting lines left etched on the board do not flex at the same time (or rate or speed) as the fibre or Teflon board material, and, as often as not these "electrical traces" simply snap in two. A broken trace becomes an incomplete circuit and when you plug the device into the mains - either nothing happens or something very wrong happens.

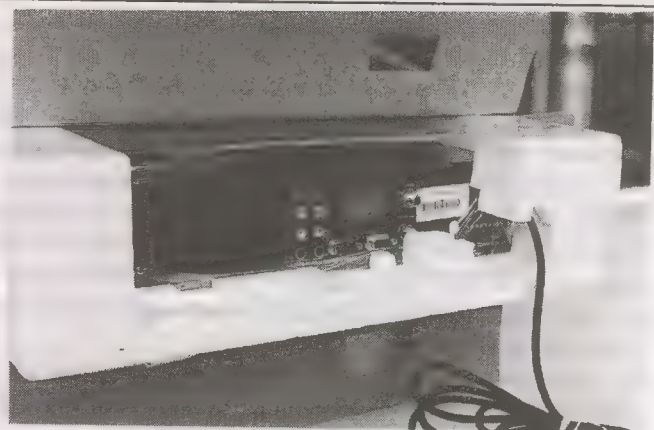
One manufacturer proudly shows off what does not happen when his IRD is dropped from a height of approximately 1 metre to a table. This may be an effective visual presentation but it hardly duplicates the real world where boxes containing IRDs are drop kicked, fall off aeroplane loading and unloading conveyor belts to the asphalt, or end up at the bottom of a freight container buried under 500 pounds of steel strap.

There is insurance - yes. If the paperwork does not defeat you, the length of time required to settle will. The answer has to be better packaging.

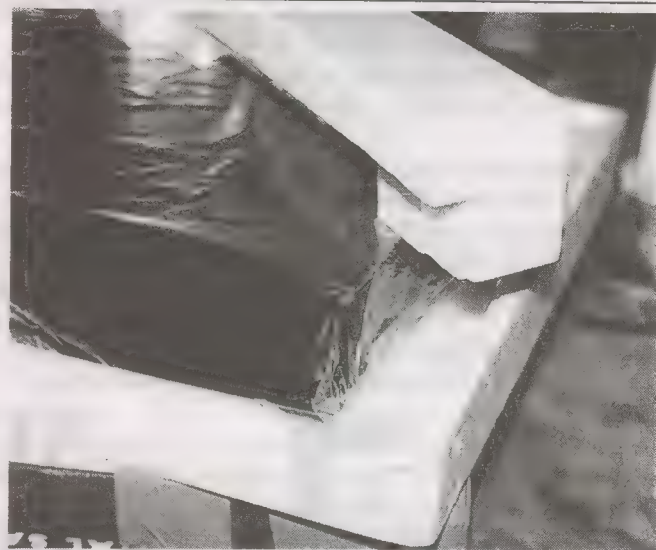
Anyone who has unpacked a Nokia IRD which is shipped with egg carton style "protection" has to be impressed that the Nokia units must be *very* well built - certainly their shipping skills are "basic" at best. With approximately ten Nokia units shipped to us, I must admit none has ever been damaged in transit, a statement not possible with most other IRDs.

The exception to this rule is the UEC line of IRDs which inherited the packing system from predecessor Panasat. First the IRD is wrapped in plastic; not a discard bag previously used for dry cleaning but real, honest to gosh, plastic apparently selected for the task at hand. Then the unit is carefully cradled in what must be several "ZARs" worth of Styrofoam that has been skilfully formed into a sandwich that fits snugly around the IRD. The Panasat 520 (etc.) models used three interlocking pieces of custom fit Styrofoam, UEC has modernised this so there is one piece that has two "hinged" end pieces which open up as a flower opens its petals after the Styrofoam pack is removed from the heavy duty outer container.

The secret with UEC is nothing is allowed to move in transit; quite the opposite of Nokia (and some Koreans we could but won't mention by name). You could slide enough food stuffs inside of the Nokia box after putting in the egg carton "packing" and IRD to feed a family of six for a week. Even the printed manual has a tough time fitting in with the UEC after the Styrofoam coffin is buttoned up tightly. In an era when IRDs are being shipped around the world by every possible mode of conveyance including lashed to the back of a donkey,



Original Panasat 520 floated IRD in Styrofoam pocket, wrapped it in plastic and protected the sandwich with a heavy duty box.



Styrofoam end pieces fit snugly into grooves to protect IRD.



Panasat successor, UEC 642, adopted same packaging adding dedicated protected spots for accessories such as RCU.

the time has come for suppliers to reappraise their packing skills.

As a dealer you can help this happen - complain loudly when you see examples of poor packaging skills and threaten to not buy any more product until they improve. That should get their attention.

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OBSERVER REPORTING FORM - Due March 5, 1999

- NEW programming sources seen since February 1st: _____
- Changes (signal level, transponder, programming content) in pre-existing programming sources since February 1st: _____
- OTHER (including changes in your receiving system): _____

NOTE: Please use P1 - P5 code when describing signal levels and receiver IF/RF settings.

Your Name _____
Town/City _____
Make/size dish _____ LNB _____ Receiver _____
Your email address _____ if you have one!

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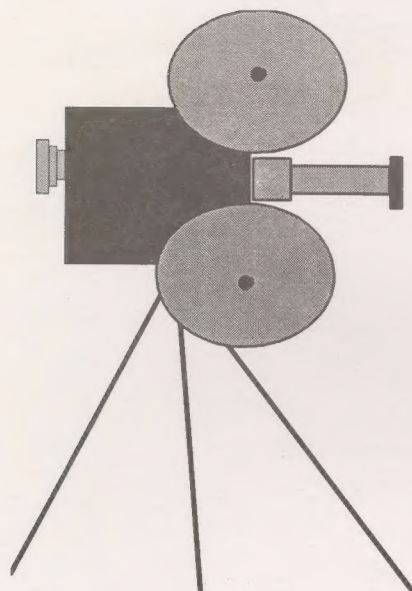
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Gain at 12.5GHz	(dB)	42.5
FD Ratio		0.52
Pole Size	(mm)	63
Wind Loading	(km/h)	160

Finish:

Dish

Epoxy-polyester powder
coated galvanised steel

Mount

Zinc Plated

Weight

(kg) 16

Antel 90cm Offset Dish

Minor Diameter	(cm)	90
Major Diameter	(cm)	100
Reception range:	(GHz)	10.95-12.75
Gain at 12.5-12.75GHz	(dB)	39.6
FD Ratio		0.50
Mast Clamp Range	(mm)	25-60
Wind Load	(N)	730

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coated galvanised steel

Weight

(kg) 10



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